

DDoS wake-up call Last week's attack against the 'Net's root servers could have been worse. **PAGE 12.**

Reverse spin? Novell is said to be considering repatriating Volera, the struggling caching company it spun off two years ago. **PAGE 14.**

NetworkWorld

The leader in network knowledge ■ www.nwfusion.com

October 28, 2002 ■ Volume 19, Number 43

QA
NetworkWorld

Talking telecom

Sprint CEO William Esrey speaks out on:

- WorldCom's effect on service prices.
- How his company plans to compete.

Also inside: Eduardo Menasce, president of Verizon Enterprise Solutions, on:

- Competing with AT&T for long-distance business.
- Adding services, expanding nationwide.

Page 18

ROBERT BURKE



JOSEPH VELICKER

Microsoft positions Office as .Net client

■ BY JOHN FONTANA

REDMOND, WASH. — Network executives last week got a first glimpse at Microsoft's plans to transform its Office suite into an all-purpose network client that can be used to interact with back-end systems easily.

The support for XML file formats Microsoft is adding to Word, Excel and Access in Office 11 means corporations would be able to

use familiar Office applications to share data with a variety of back-end, XML-based data repositories, line-of-business systems and e-commerce servers — all without the need for clunky middleware or integration software.

The idea is to move users away from static text documents and spreadsheets and into a world where real-time data can be imported and exported from

See Office, page 74

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Buyer's GUIDE VPN

VPN prices decline and vendors look beyond standards.

Page 51

Cisco and Check Point earn top honors in IPSec VPN testing.

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Pricing VPNs for 100 to 10,000 users.

Page 54

IPSec VPN alternatives.

Page 56

Nortel finally set for VoIP charge

■ BY PHIL HOCHMUTH

Nortel this week will release IP telephony gear that promises to scale the company's voice-over-IP support by a factor of 10 while finally bringing its convergence portfolio up to speed with chief rival Cisco.

The company's second version of its Succession Communication Server for Enterprise (CSE) 1000 IP PBX will support 1,000 IP phone users on a server, and up to 10,000 IP phones on a cluster of 10 servers. Also being introduced is a version of Nortel's

CallPilot unified messaging system and a power-over-Ethernet LAN switch — the BayStack 460-24T-PRW.

These products are aimed at companies looking to move to IP telephony but unwilling to give up the reliability and features of a traditional PBX system, the company says.

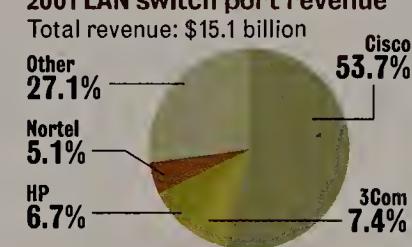
"Scaling up the CSE 1000 is really a significant move for Nortel," says Brian Riggs, a senior analyst with Current Analysis. "They have really struggled in the past couple of years to be competitive in terms of scalability and functionality with other packet PBX companies. Nortel should be a powerhouse in

See Nortel, page 18

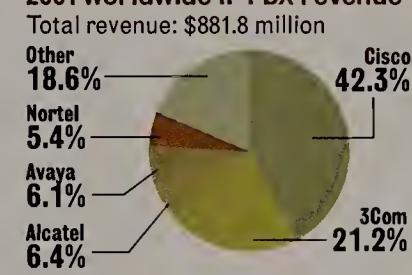
The playing field

Nortel has some catching up to do in converged IP networks.

2001 LAN switch port revenue



2001 worldwide IP PBX revenue



Answers to your VoIP questions

■ BY PHIL HOCHMUTH AND TIM GREENE

If you're seriously considering making the plunge, you no doubt have loads of questions ranging from the technical to the financial to the political.

Can VoIP traffic traverse firewalls? Can it really save us money? What is the best way to get IT and telecom staffs to work

ARE YOU READY FOR CONVERGENCE?

Last of four parts

Can my LAN handle VoIP?

IP telephony works best on LANs running switched 10/100M bit/sec Ethernet to the desktop and switched Gigabit Ethernet in the backbone. If you're still connecting desktops

See Convergence, page 20

“Are we secured aga

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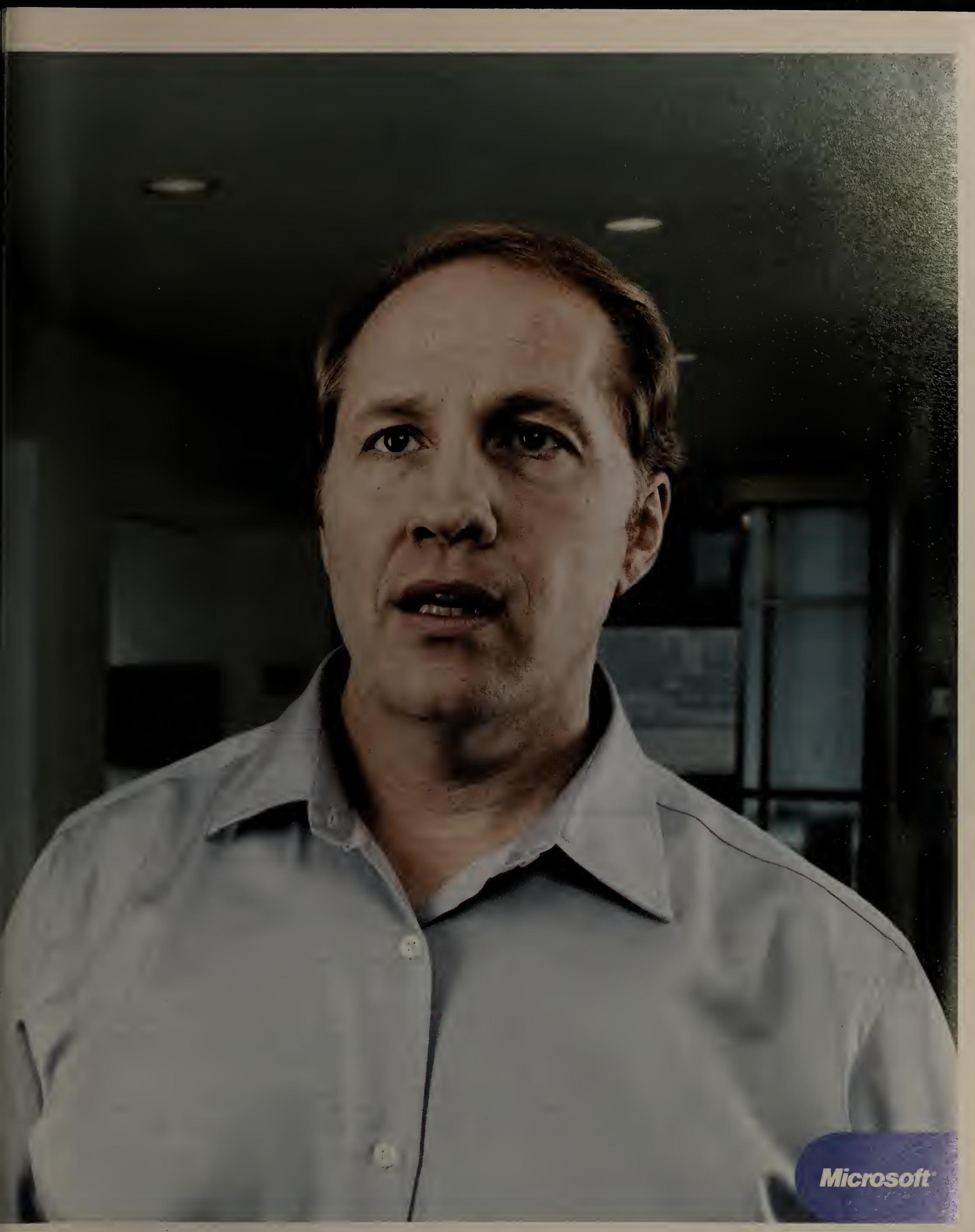


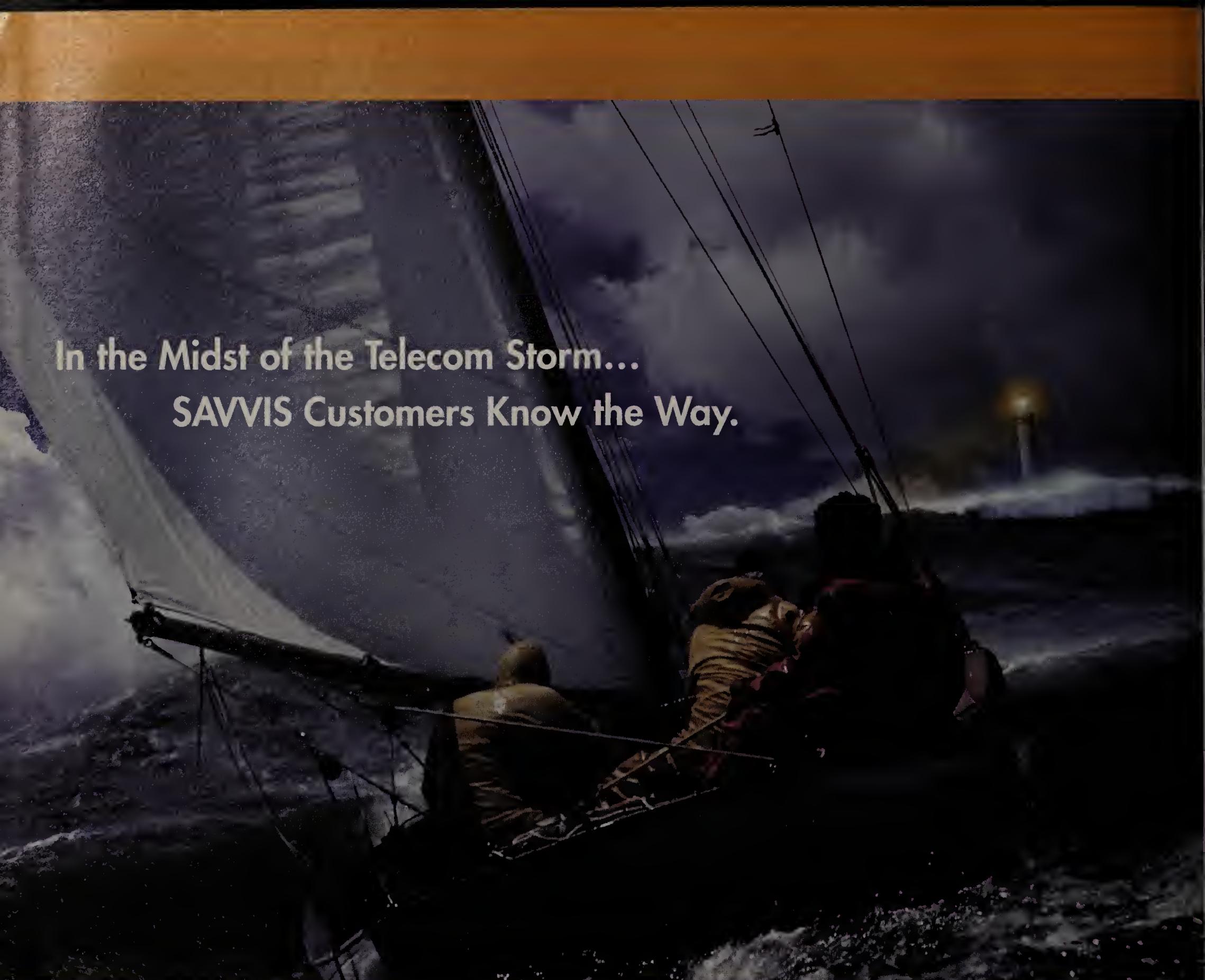
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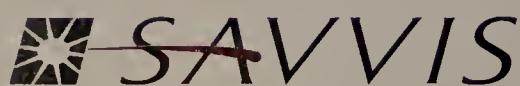
the web.”







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More online! www.nwfusion.com

See a comparison of 115 VPN products and services from more than 50 vendors in our Buyer's Guide. **DocFinder 2828**.

See what data you should request from your vendor when issuing your VPN RFP with our RFP list. **DocFinder: 2852**.

Get the details on how we tested the remote access VPN products. **DocFinder 2826**.

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Interactive

The pro-Ogg Vorbis movement

Ogg Vorbis might sound like a Star Trek villain, but it's really an open source competitor to MP3. When Cool Tools author Keith Shaw wrote about a Sony device that supports most everything but Ogg Vorbis, open source fans went berserk. See what all the hubbub is about. **DocFinder: 2840**

The Secure Enterprise

Security on your mind? Ease your fears with our special report, The Secure Enterprise, which offers advice for locking down your network. Get tips for handling patch management, vulnerability warnings and security device management. **DocFinder: 2841**

Forum: In the defense of FastNets

Gearhead columnist Mark Gibbs didn't like the power switch and the firm jumps in to defend it. Check out Gibbs' critique and add your thoughts. **DocFinder: 2842**

Seminars and Events

Convergence is a go

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Columnists

Compendium

New spamming technique Fusion Executive Editor Adam Gaffin alerts you to a new type of spamming aimed at Webmasters who obsess over their site's referral logs. **DocFinder: 2857**

Help Desk

Preparing for the A+/Net+ Columnist Ron Nutter helps a user who's wondering if he needs to bother with official A+/Net+ classes when he says he knows enough to ace the test and move on to his Microsoft Certified Systems Engineer work. **DocFinder: 2844**

SOHO Tech

KVM switches make a comeback To save space, time and money, columnist James Gaskin says these little wonders can't be beat. **DocFinder: 2845**

View from the Edge

Convergence: Are we there yet? The Edge Managing Editor Jim Duffy ponders the state of convergence after at least seven years of hype. **DocFinder: 2846**

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News Bits

The Good The Bad The Ugly



Second thoughts. Rep. Howard Berman (D-Calif.) apparently has heard the countless critics of his legislation that would empower copyright owners to hack into peer-to-peer networks as a defensive measure. A spokesman for Berman said last week that the lawmaker will rework his proposal before filing it again in the next Congress. Not filing it again would be better, but progress is progress.



Lucent's losses mount. The telecom equipment maker posted its 10th consecutive quarterly loss last week, this time \$2.8 billion. If anyone's looking for a silver lining, the company lost \$8.8 billion in the same quarter last year. Lucent stock still was trading at less than a buck late last week.



Paper jams are nothing. Electronics maker Brother International is recalling about 100,000 business printers after receiving reports that two had caught fire. Sold between June 1997 and December 2000, the recalled printers are model numbers HL-1040, HL-1050 and HL-1060, plus the MFC-P200 multifunction device. ➤



BRIAN GADRY

Microsoft relents, issues XP patch

■ Microsoft has responded to criticism from users and issued a software patch for a major security vulnerability in the Windows XP operating system, reversing an earlier decision to require users to upgrade to XP Service Pack 1 to remove the vulnerability. The security hole exists in the XP Help and Support Center and affects the Microsoft Windows XP Home Edition, Professional and 64-Bit Edition operating systems, according to Microsoft. Taking advantage of a code flaw for a feature that sends information on new hardware to Microsoft, an attacker could remotely access a vulnerable machine from a Web page or a link in an e-mail formatted in HTML. Soon after the discovery of the vulnerability, Microsoft issued XP Service Pack 1, which patched the vulnerability and also a number of other security holes in the XP operating system.

Fiorina sees limited growth in 2003

■ Hewlett-Packard is bracing for another rough year in 2003 when it comes to IT spending. CEO Carly Fiorina last week told analysts the company expects single-digit growth in IT spending next year. In the longer term, Fiorina said she expects growth rates of less than 10% for the industry. "I am talking about the economy because clearly the economy is a huge pressure on the IT industry," she said. "It is clear that economics are driving the slowdown in IT spending." The HP chief criticized other CEOs for overspending on technology in the last decade. The executives were caught up in trying to find the fastest servers and best software. "Most CEOs know they overspent on technology in the 1990s," Fiorina said. "They spent on hot boxes and killer apps."

Dorman sees opportunity in doldrums

■ AT&T President David Dorman hopes the slumping telecom industry will turn around, but until it does, he said AT&T isn't shy about taking advantage of opportunities where it sees fit. Dorman, one of several telecom industry officials who spoke last week at The Yankee Group's Telecom Industry Forum, compared AT&T's situation with that of the U.S. and the Soviet Union in the 1980s. "It's a bit like in the Reagan era at the end of the Cold War when the United States was able to invest in armaments at a level the Soviet Union couldn't keep up with... bringing an end to the Cold War," Dorman said. "We find that the nearest competitors are forced to cut back and disinvest."

Should have seen it coming

■ Start-up Premonitia, an Acton, Mass., fault-management company that boasted network industry icon Paul Severino as its chairman, has closed up shop (www.nwfusion.com, DocFinder: 2855). "The challenges of maturing our technology for the diversity and rigors of production IP networks were deeper than our research, and therefore we have discontinued efforts to commercialize the technology," says Peter Vicars, who was CEO of the company, which was founded last year on \$3.2 million in seed financing. "Maybe we will find a partner with deeper research pockets where [our] algorithms will be evolved and adapted in the future for the benefit of the industry."

Palm to unveil Tungsten products

■ Palm today is expected to unveil the first handhelds of its recently announced Tungsten product line, which is aimed at the enterprise market. For enterprise users, Palm is finally introducing the Palm OS 5.0, rewritten for powerful 32-bit RISC microprocessors, such as Texas Instruments' 175-MHz OMAP1015 ARM chip, along with a Texas Instruments digital signal processor. The combination of chip, operating system and a Secure Digital format expansion slot will let Tungsten devices handle bigger applications, more data and integrated wireless communications options. The devices also will have better graphics and multimedia features than the current devices based on Palm OS 4.1. Palm is expected to show two Tungsten devices: a high-end device focused on handheld applications; and a GSM/General Packet Radio Service smartphone. Palm has kept quiet about pricing. Users are speculating that the devices could be about \$500.

Online responses lacking, study finds

■ A new study has found that not only do many Fortune 100 companies lag in responding to general online inquiries, 37% do not reply at all. Conducted by Customer Respect.com, a division of International Ventures Research, the study rated Fortune 100 companies' overall online "customer respect," based on factors such as privacy, principles, attitude, transparency, simplicity and responsiveness that consumers encounter at the companies' sites. The companies performed the lowest in responsiveness, garnering a 4.8 rating out of 10. Forty-one percent of the companies replied to inquiries within 48 hours, while just 9% received a perfect score in responsiveness. PG&E and Ford ranked among the worst in terms of responsiveness, while Freddie Mac, Costco and Verizon rated among the best.

COMBINED

Not out to kill Outlook (yet)

Mitch Kapor, the founder of Lotus, says his new, open source messaging and collaboration application is not designed to take down Microsoft Outlook. The new app, code-named Chandler (as in the detective, not the "Friends" character) is aimed at small and midsize companies that can't afford Exchange servers, he says. But he adds, if Chandler takes off like Linux, who knows?

Read more at: www.nwfusion.com, DocFinder: 2851.



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Storage mgmt., performance wares on tap at show

■ BY DENI CONNOR

ORLANDO — A handful of big-name vendors — from BMC Software to IBM —

this week at Storage Networking World will roll out products for making storage more flexible and easier to manage across networks.

BMC's new Patrol Storage Automation — Provisioning module can eliminate much of the manual labor involved in assigning, configuring and managing arrays, switches,

host operating systems, volume managers and file systems within storage environments. BMC says the software, which works with its Patrol Storage Manager, can reduce the number of steps in a process such as assigning additional storage to an application from as many as 60 to just a few.

"Automated provisioning is one of the first obvious areas where automated, policy-based management makes sense," says Anders Lofgren, a senior analyst for Giga Information Group. "This can have obvious cost-reduction benefits as well as improve service levels in regard to meeting the capacity needs of applications."

Initially the BMC software will work with EMC and Hitachi arrays, Brocade and McData Fibre Channel switches, Veritas Software Volume Manager and File System, as well as the Universal File System, NT File System and Oracle databases.

The module will be available next month starting at \$8,000 per terabyte managed.

Separately, Computer Associates will air BrightStor ARCServe Backup Version 9, which has an improved administrative interface that the company says should enable even non-IT personnel to install the package and schedule back-up operations.

Also new in ARCServe Backup Version 9 is support for the Network Data Management Protocol. This protocol lets traffic run over dedicated links between a server and storage device rather than over a company's main Ethernet pipes.

CA also has simplified ARCServe pricing, whereas before software for different operating systems or capabilities might have been priced differently. CA now charges \$700 per master server and starts pricing for individual agents for server-to-server backup at \$200.

Also at the show, IBM will announce that it is doubling the capacity of its Enterprise Storage Server 800 and 800 Turbo arrays to 56 terabytes. In addition, the company has enhanced its Peer-to-Peer Remote Copy software, which enables the mirroring of data from one array to another. IBM has added a "trust-me" mode that sends only the data changed during a failover operation back to the primary site.

Intel will use the show to unveil a new version of its Pro1000T iSCSI adapter, which now has up to twice the performance of the previous model. The Pro1000T lets block-level storage data be transported over an Ethernet LAN instead of Fibre Channel storage-area networks with greater efficiency.

The adapter, which runs at 700M bit/sec, will be available in the first quarter of next year for about \$700. ■

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Q&A with Mark Bregman, of Veritas, discusses the company's storage vision and the competition.

DocFinder: 2856





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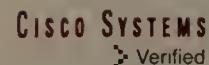
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DDoS attack highlights 'Net problems

Episode called crude, ineffective . . . but concerns mount about future problems.

■ BY CAROLYN DUFFY MARSAN

Last week's distributed denial-of-service attack against the Internet's root servers underscores that much of the Internet's infrastructure remains vulnerable to these common hacker attacks and more sophisticated assaults that might be on the horizon, experts say.

That an easily preventable distributed DoS attack was successful against so many of the Internet's root servers surprised many network executives, who say they thought more precautions were being taken by the operators of such a key component of the Internet's DNS.

A distributed DoS attack occurs when a hacker hijacks machines across the Internet and uses them to send a flood of requests to a server until it becomes overwhelmed and stops functioning.

In this case, the distributed DoS attack was aimed at the 13 root servers that run as the master directory for lookups that match domain names with their corresponding IP addresses. Below the

Anti-DDoS start-ups

Early products attract handful of ISPs, companies.

Company	Product	Description	Customers	Funding
Arbor Networks	Peakflow Platform	Distributed, dynamic network profiling and anomaly detection for carriers.	Six carriers, Department of Defense	\$33 million
Asta Networks	Vantage System 2.0	Automated system for detecting DoS attacks.	Internet 2 Abilene Backbone	\$18 million
Captus Networks	CaptIO Network Security Device	Policy-based security that automatically detects, stops DoS attacks.	Several government, university customers	\$21.1 million
Mazu Networks	Enforcer 300, Enforcer 10000	Traffic-filtering appliance for companies that detects DoS attacks.	Ten including MTV, New York Mercantile Exchange	\$20 million

shows that hackers are becoming more ambitious in choosing targets.

"Two years ago, most of the denial-of-service attacks were on actual Web sites. With this attack, people are going after parts of the infrastructure," says Ted Julian, co-founder and chief strategist with Arbor Networks, a start-up that sells an anti-distributed DoS monitoring system to ISPs. "It changes from a local attack to a global attack."

stood the attack and ensured that it didn't slow down performance across the Internet.

By simply limiting the amount of ICMP traffic that the root servers can accept, administrators could have prevented the attack, experts say. In fact, root server operators who didn't already have rate limits set on their ICMP traffic set them as soon as the attack was discovered. But by then, these servers had already been inundated with phony traffic.

"An ICMP flood is one of the easiest things to filter," says Jim Lippard, director of Internet security at Global Crossing. "For the name servers we provide, we just filter out ICMP traffic completely."

The root server attack comes nearly three years after the first major distributed DoS attack knocked such high-profile Web sites as Yahoo, eBay and eTrade offline, causing financial hardship to these companies. Since then, high-profile distributed DoS attacks have crippled Microsoft's Web site and led U.K. ISP Cloud Nine to go out of business.

Experts say susceptibility to distributed DoS attacks exists at all levels of the Internet's DNS, from the root servers to the backbone ISPs to companies that run major Web sites. The same types of distributed DoS attacks also continue to cause damage.

"Most of the vulnerabilities that are getting exploited on a daily basis [have patches] that were available for months, if not years," Lippard says. "The same vulnerabilities are used long after they should have been dealt with.... It takes an ICMP attack like this to get people to put filters up."

Although the latest distributed

several hundred thousand dollars for carriers.

"With the state of the world today, it doesn't take a sophisticated attack to do damage," Melvin says. "The analogy I use is that people are going to bed at night with the doors open."

Holding back a widespread fix to the distributed DoS problem is that most ISPs haven't purchased the latest anti-distributed DoS systems and don't offer distributed DoS monitoring as a premium service to their corporate customers.

The backbone providers have done "very little" to address the distributed DoS problem since it came to light almost three years ago, says Gartner analyst John Pescatore. "The ISPs are not buying anything because they're in such tight financial shape."

Most carriers have established round-the-clock Internet security teams that monitor their networks for all kinds of attacks. These teams will help corporate network managers mitigate a distributed DoS attack after it has been discovered. Most carriers also do some kind of traffic filtering, such as limiting ICMP traffic in a way that would prevent an attack such as the one against the root servers.

Anti-distributed DoS technology "needs to be baked into the infrastructure," Pescatore says. "The telecom guys need to work together to put in denial-of-service protections such as ingress filtering, egress filtering, traffic load balancing. It needs to be done in a coordinated manner across the backbone." ■



“Last Monday's attack wasn't very skillful from the point of attacking the DNS root servers... [but] there are going to be some lax administrators who get a big wake-up call.”

Paul Mockapetris

An inventor of the DNS and chief scientist at Nominum

root servers are the servers that support top-level domains such as .com, .net and .org, and below the top-level domain servers are hosts of individual Web sites.

"Last Monday's attack wasn't very skillful from the point of attacking the DNS root servers with a well-known ping attack," says Paul Mockapetris, an inventor of the DNS and chief scientist at Nominum, a DNS software vendor. "There are going to be some lax administrators who get a big wake-up call."

The root server attack also

During the root server attack, a hacker sent fake ping requests, which are queries from one host to another to determine if a communications path is available between the two hosts. Ping messages, which are rarely received by the root servers, are sent using the Internet Control Message Protocol (ICMP).

The 13 root servers were flooded with ICMP requests for about an hour, causing several root servers to stop being available to regular Internet traffic. However, the remaining root servers with-

experts say susceptibility to distributed DoS attacks exists at all levels of the Internet's DNS, from the root servers to the backbone ISPs to companies that run major Web sites. The same types of distributed DoS attacks also continue to cause damage.

"Most of the vulnerabilities that are getting exploited on a daily basis [have patches] that were available for months, if not years," Lippard says. "The same vulnerabilities are used long after they should have been dealt with.... It takes an ICMP attack like this to get people to put filters up."

Although the latest distributed

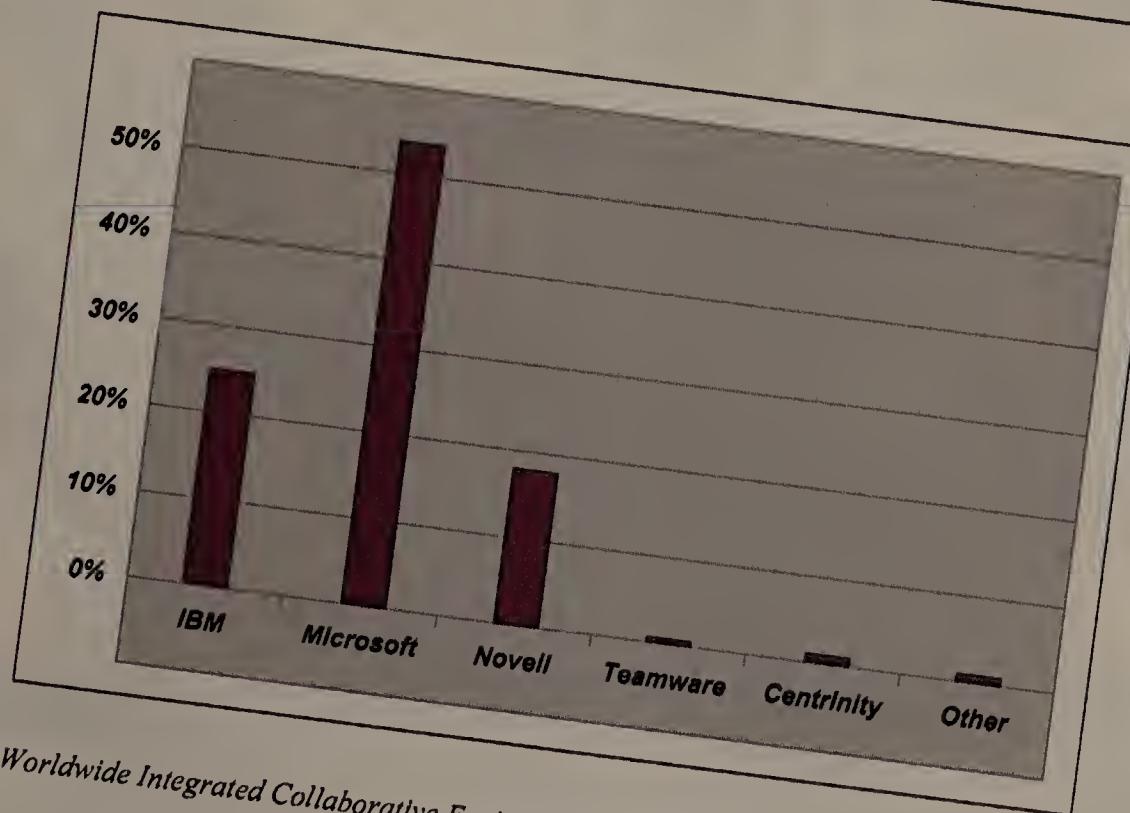
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Microsoft (Exchange/Outlook) - #1 in new users for Integrated Collaborative Environments.



Source: IDC #27600, July 2002, Page 5, Table 2.
Worldwide Integrated Collaborative Environments Forecast and Analysis, 2002-2006: How Vendors Can Keep the ICE Flowing.

- 5 -

<http://www.tpc.org/information/benchmarks.asp>

(TCO as function of
Cost per user)

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Microsoft

Novell might reabsorb caching spinoff

■ BY DENI CONNOR AND JENNIFER MEARS

PROVO, UTAH — Novell is reportedly close to pulling the plug on its less-than-2-year-old caching spinoff Volera.

Sources close to Volera and Novell tell *Network World* that work is under way to combine Volera's managed and secure content-distribution capabilities into Novell's BorderManager. The Internet access and authentication product is just one piece of Nsure, a suite of integrated offerings that Novell says will let businesses govern what users can access on corporate networks.

According to sources, "the deal is as good as done" and Volera will cease to exist as a separate entity sometime in the next few months.

However, a Novell spokesman says that development on Volera's Exelerator product is continuing independent of

work on BorderManager. Next week, Volera will start a beta program for Exelerator on the Linux platform and has 19 companies lined up to participate, he says.

During the company's third-quarter earnings call in August, CEO Jack Messman said Novell was "re-evaluating [its] strategy at Volera." Further, in its third-quarter filing with the Securities and Exchange Commission (SEC), Novell says Volera sales have been flat and are expected to remain so through the remainder of the year.

"Volera's performance has not met the growth expectations of the company . . ." the filing states.

Volera has yet to turn a profit since it was spun off in February 2001 to take advantage of what Novell saw as a hot market for its content networking products, particularly its Internet Caching System. The trouble was Novell spun off the company at a time when the caching market al-

ready was starting to take a hit, analysts say.

"Novell was an early entrant into caching with great technology, but didn't really succeed because they didn't solve the problem of how to get to [customers] other than their installed NetWare base," says Peter Christy, an analyst with Nets-Edge Research. "Volera could have addressed that problem, but . . . they were spun out too late."

By the beginning of 2001, the once high-flying caching firms already were being grounded by the demise of their dot-com customer base and the slowed spending of service providers. CacheFlow announced in February 2001, as Novell launched its joint caching venture with Nortel and Accenture, that third-quarter sales would be below expectations, and laid off half its workforce in a restructuring effort.

See Volera, page 16

Security synchrony

Here's what the integration of Novell's Nsure security and identity management platform and Volera's content delivery and caching products might include.

Function	Nsure	Volera
Proxy cache	X	X
VPN, firewall	X	
Authentication	X	X
Single sign-on for applications	X	
Identity and access management	X	X
Synchronization with other operating systems and eDirectory	X	
Provisions access to applications	X	
Metadirectory technology	X	
Streaming media and HTTPS acceleration		X
Monitor/manage caches		X
Distribute/balance cache content		X
Reporting and accounting functions		X

Vieo looks to automate application management

Company plans to use hardware appliances to manage application server environments.

■ BY DENISE DUBIE

AUSTIN, TEXAS — A small company new to systems management says its hardware appliance will give network managers a real-time, automated alternative to the traditional software tools used to manage complicated application server environments.

Vieo's Adaptive Application Infrastructure Management (AAIM) appliance — which is still in development and expected to ship in mid-2003 — is a Layer 2 switch that initially will support and manage hosts running Web, application and database servers.

AAIM will watch traffic looking for application abnormalities compared with predefined policies. And because AAIM is a switch, when problems crop up it can

redirect traffic, reprioritize applications or reallocate network resources to remedy the situation, says Robert Fabbio, Vieo CEO and president.

Fabbio — founder of Tivoli Systems and Dazel, which he sold to IBM and Hewlett-Packard, respectively — might have struck a nerve in the management market, says Rich Ptak, president of consulting firm Ptak Associates.

Large network management companies and smaller players alike — including Managed Objects, Smarts and Micromuse — have tried to automate application performance management with software. But the tools generally require agents, a lot of upfront configuration and hands-on management to keep up with the dynamic nature of application and Web server environments.

"AAIM's agentless architecture and automated, high-speed approach proposes to manage the infrastructure in real time to the benefit of a company's business-critical applications," Ptak says. "It looks to me as though [Vieo] is positioning itself along the lines of IBM's autonomic computing model."

Fabbio says while Vieo initially will target AAIM at companies trying to solve particular application performance problems, he predicts that within three years AAIM will compete with IBM Tivoli, Computer As-

sociates and Cisco as customers learn how the appliance can change the way applications are managed.

AAIM's first release will support Apache Web services, WebLogic application services, Oracle data services, and Linux and Solaris platforms. Fabbio says the company will add support for popular industry products such as SAP applications, WebSphere application services, DB2 and SQL databases, and AIX and Windows platforms.

Fabbio joined Vieo last November. Before his arrival, Vieo had two other incarnations: one as a network consulting firm founded in 1994 and the second as an InfiniBand provider in early 2000. Fabbio says InfiniBand is the management-enabling technology.

The appliance will come with 200 Gigabit Ethernet ports and translate that to InfiniBand inside the box. "Because InfiniBand offers 800M bit/sec worth of throughput vs. the 100M bit/sec of Gigabit Ethernet," Fabbio says, the appliance can perform the deep packet analysis needed for network management without degrading network performance.

Vieo is not the first company to tackle the management problem using software-enabled hardware. Companies such as Net-QoS, Packeteer, Peregrine Systems, and SilverBack Technologies have management products based on hardware.

A Meta Group study shows that while hardware-based management represented only 5% of the overall market in 2000, by 2008 hardware appliances will garner 70% of the information collection and 60% of the processing markets associated with enterprise network management.

But despite the potential benefits of AAIM — an agentless architecture that is scalable and easy to deploy — the company faces several hurdles. For one, network managers might be hesitant to replace hardware on their complicated networks.

Brian Jones, manager of network engineering and operations at Virginia Polytechnic Institute and State University in Blacksburg, says that while he is not familiar with Vieo or AAIM, the idea of swapping in a piece of hardware to manage applications does not appeal to him.

"I am not readily open to forklift upgrade my network to gain application management," Jones says. He adds the approach would worry him because it could potentially "introduce new single points of failure into the network." ■

Correction

In the review of Network Management Systems (Oct. 21, page 50), two scores were given for two of the products in the "Best of the Best" chart and Scorecard box. The scores were as follows: OpenView, 4.65; VitalSuite, 4.55; and WebCenter, 4.50.

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A

Esrey looks toward level pricing field

Sprint CEO says company positioned well to deal with new competitive realities.



Two years ago we predicted that Sprint CEO William Esrey would be the only leader of the big three telecommunications companies still holding the reins by the end of 2001. While that time-frame was about a year early, Esrey is indeed the only telecommunications CEO with staying power. During his 17-year tenure, he has created the third-largest long-haul provider in the U.S.

and one of the most advanced wireless networks. Esrey recently spoke with Network World Senior Editor Denise Pappalardo.

How does Sprint plan to compete successfully with debt-free service providers that have emerged or may emerge from bankruptcy?

We look at a main competitor like WorldCom and say, 'What if they were debt-free?' You know right now that [WorldCom's] pricing in the marketplace with accurate, honest accounting would not produce profits. Their new investors, whether debt holders taking equity or whatever it's going to be, are going to want a return on investments. So they are going to have to compete effectively.

They also have an infrastructure that's built for a lot bigger business than they're not going to have. There is a lot of business fleeing distressed carriers.

If WorldCom comes out of bankruptcy without interest costs, as some of them do, that's an advantage point.... But I don't think it is at all clear or certain that they will come out of bankruptcy, although that is a distinct possibility.

Is WorldCom the only distressed company that Sprint is looking at from a competitive standpoint?

Oh no, there are a lot of companies, whether it's a Williams or a Global Crossing. But those companies are not nearly as significant. But even a Qwest, which has had a lot of questionable accounting, is going to be a lot less effective competitor going forward as they correct their transgressions of the past.

What's happening with prices?

First of all, pricing is much better than it has been. Some prices continue to go down, some have stabilized, and some have gone up. I think it's more important to look at the underlying situation in the marketplace. Basically you had price leaders that were trying to gain market share through pricing. In long-distance they were Qwest and WorldCom. We subse-

focus on its core search business. InfoLibria has laid off most of its staff and says it is pursuing "strategic alternatives."

"Volera is one of the few players left selling software for [enterprise content delivery networks] or caching. That makes you wonder if it's a market that's addressable by a separate company or if it needs to be part of a larger group," says Michael Hoch, research director of Internet infrastructure at Aberdeen Group. "If Novell wants to tie [the Volera] technology closer to its Web services story, it would make sense to bring it back in."

A Volera customer says such a move wouldn't surprise him.

"I can believe with Novell under new man-

agement that they would want to bring everything in," says Richard Sun, network systems engineer at W.L. Gore & Associates of Newark, Del.

"I was curious how they are going to [reconcile] the Excelsior/BorderManager product lines," he says. "However, I would think it only makes sense that whatever Volera improves upon in Excelsior, they would put back into BorderManager." ■

Are the traditional services such as frame relay, ATM and private line better from a profit standpoint than new services such as IP or IP VPN? And is Sprint betting on those traditional services?

No, they are all important. We have to service our customers where our customers are going. We can't say, 'This is our dog food and let's eat it.' We have to go where the customers are going. Costs are changing and pricing is changing. Generally voice services [are] more profitable than data services.

How does Sprint plan to increase profitability and reduce debt?

You'll continue to see falling revenues because you have one-, two- and three-year contracts that were created with prices that don't exist in the marketplace today. So just redoing those contracts with current prices will mean there's a negative impact on revenues for the same amount of business. It will take a year or two to work through repricing all of those contracts no matter how good or how firm prices get.

Balance sheet is a separate issue and extremely important because the industry is way too debt-laden. We have about \$22 billion in debt. We'd like to have a lot less.

We have a definitive agreement to sell our directories business for \$2.3 billion. We have mandatory convertibles that we already sold that will bring in \$1.7 billion, so that's \$4 billion. If you just look at the FON side of the business, it's generating in excess of \$1 billion in cash flow, and the PCS side is rapidly improving its cash flow. Very conservatively, you can estimate \$6.5 billion in improvements in 2004.

Are there particular areas within Sprint in which you're investing?

We are constantly investing in our growth on the wireline side. On the wireless side, we continue to build out the network, adding 1,800 cell sites this year. We will continue to spend in the billions in capital investment going forward. But we are not building ahead of demand.

There is a perception of negativity in the telecom industry. How do you deal with that?

Customers that have dealt with us know the way we do business. I think it's more the man or woman on the street that thinks all business people are crooks, particularly if you're in the telecom business. They read about Global Crossing, Qwest, WorldCom and Adelphia. Who can blame them? You had trillions of dollars of investor value lost between debt being wiped out and equities falling precipitously. You have falling stock prices and this absolutely egregious behavior by some people. I'd be mad, too. ■

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IP makes the value menu

Converged network built with Cisco IP Communications solutions fits the bill for Burger King Corporation's new world headquarters.

Rafael Sanchez, CIO at the fast food giant Burger King Corp. (BKC), got an opportunity that some IT executives never have. BKC had outgrown its 16-year old headquarters location in Miami and was building a new home. That meant Sanchez had a clean slate on which to fashion a new network. "We wanted to use technology that would last us five to 10 years," Sanchez says. "It was an investment for the future, and we thought IP Telephony was a perfect choice."

Over the last Fourth of July weekend, Sanchez and his team cut over a new headquarters network capable of carrying voice, video and data on a single, converged infrastructure. That infrastructure is built on the Cisco Architecture for Voice, Video and Integrated Data (AVVID), a blueprint to help enterprises build standards-based networks and deploy emerging technologies, including new Internet business solutions. BKC's new infrastructure includes a variety of voice-enabled Cisco switches and routers along with numerous solutions from the Cisco IP Communications system, with the ability to build in a level of redundancy not possible in traditional voice.

Among the additional benefits that BKC's new converged network delivers are simplified network management, increased productivity and advanced, feature-rich functionality enabled by Cisco IP Phones, Cisco CallManager and Cisco IP Contact Center software. As the burger leader extends the network, the company expects to take advantage of toll bypass to save money on long-distance voice communications – a consideration that is especially important for its overseas locations.

"The converged solution provided us with the opportunity to consolidate our platforms, and significant benefits in terms of overall cost of ownership," Sanchez says. "The cost of adding a redundant IP Telephony solution to our LAN infrastructure was considerably less than the cost of deploying a non-redundant traditional PBX solution."

A clean break

Sanchez had sound reasons for breaking with the past strategy of separate data, voice and video networks. Flexibility was one, because TDM networks require that you earmark a set amount of bandwidth for voice and video. Moves, adds and changes were another issue, as they required calls to the phone company, incurred additional costs, and took an excessive amount of time to complete. With Cisco's IP Telephony, users can move their own Cisco IP Phone, plug it in and the Cisco CallManager will immediately recognize the phone's unique MAC address.

Still, Sanchez admits to a certain amount of trepidation while considering the decision to go all-IP. "One of our questions was whether the technology was ready for the 100 percent uptime that is required," he says. "IP telephony has surpassed our expectations in terms of reliability. The implementation was successful, the technology has proved itself in terms of maturity, and we have had no outages since day one. When you consider the logistical challenge of moving into a new facility with 600-plus people, that is a tremendous achievement."

The converged network is also more flexible. When the company decided to add a second building across town to its original single-building headquarters design, in just two weeks Sanchez and his team were able to draw up a plan to accommodate the change. "If we were using traditional telephony, it would have been a much longer timeframe, and more costly," he says.

Productivity booster

Perhaps most important to BKC is the productivity enhancements its converged network brings, for both IT staff and end users.

On the IT side, the new network simplifies management chores. Because the company now has a single infrastructure to manage, it no longer needs separate sets of IT staffers to manage its data and telephony networks. A centralized, converged infrastructure will also yield significant cost savings over the life of the network.

End users are also more productive since the graphical user interface on the Cisco IP Phones makes them far easier to use than a traditional office phone. Interactive "soft keys" guide users through various features, changing func-

tionality based on what task the user is trying to accomplish (see photo). Tasks like putting a call on hold, call forwarding and initiating a conference call are now as simple as pushing a single button on the Cisco IP Phone. Users employ the same interface to customize and control their call options.

Cisco IP Phones support XML-based applications, which enable them to display data, such as travel or weather updates, and take on Web-like applications. One application that BKC is currently piloting will streamline conference room scheduling. With more than 100 meetings a day in 30-plus conference rooms, booking rooms chews up an inordinate amount of an administrator's time. Sanchez expects the new application will make it simple for end users to schedule the rooms on their own via the IP Phone interface.

"We're just scratching the surface of our use of IP communications," Sanchez says. "We expect that future uses of the technologies will provide additional, significant benefits."



The graphical user interface of the Cisco IP Phone makes it far easier to use than a traditional phone.

Video and call centers

IP Communications solutions are improving productivity in BKC's various call centers as well. The company has separate call centers for its travel and human resources departments. Cisco IP Contact Center (IPCC) software is already at work in the travel call center and will soon be rolled out in other centers.

With Cisco IPCC, calls from around the world come in to an integrated voice response unit that can provide some self-service and help ensure that each call is routed to the most appropriate agent. Cisco IPCC also populates the agent's screen with data about the caller, reducing call times. With IP telephony, all these features can be provided over a single set of wires and calls can be routed to agents located anywhere in the world, providing further flexibility in staffing.

Video applications, which already get plenty of use at BKC, will be further expanded over the converged IP network. "This infrastructure will allow us to do video streaming to the desktop," Sanchez says. "We'll be looking at using video across the network for training," including to restaurant locations.

Asked why he chose Cisco to help build his company's converged network, Sanchez says it was a combination of BKC's previous experience with Cisco data networks and Cisco's commitment to IP communications. "Since we were moving to a new technology, we wanted to be comfortable that we were with a vendor that was going to be there for the long term," he says.

This is the second of a six-part advertising series on Cisco IP Communications solutions. Look for a technology update on unified messaging in the November 25 issue.

Learn more about Cisco IP Communications

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IBM improves autonomic efforts

■ BY ANN BEDNARZ

ARMONK, N.Y. — The idea behind the technology known as autonomic computing is that corporate resources such as PCs, servers and software will take care of themselves — handle configuration, identify and fix ailments, allocate and optimize resources, and protect themselves from harm. The theory is that the more components can manage themselves, the less the burden that falls on IT staff.

Last week IBM re-emphasized how much it believes in the technology by forming an autonomic computing division dedicated to expediting the addition of self-managing and self-correcting features throughout its products and services. It's a step in the right direction, analysts say. But some users remain skeptical about the prospect of self-handling IT gear.

Autonomic computing is not new to IBM. The company announced its eLiza computing initiative in April 2001, and already some self-managing features are built into IBM products, such as its Tivoli management line and forthcoming DB2 Version 8 database software (see graphic).

IBM has not disclosed its investment in autonomic com-

puting, but analysts estimate the company is spending more than \$500 million per year.

Nor is Big Blue alone in pursuing self-healing computing efforts. Sun last month shed some light on its touted N1 initiative to ease network management. Its first N1 deliverables will include software that helps group servers and storage hardware for centralized management, followed next year by tools for provisioning application resources, Sun says. For its part, Hewlett-Packard has its Utility Data Center architecture.

But the creation of a dedicated autonomic computing unit suggests IBM is stepping up its efforts.

The fact that IBM has established a division devoted to autonomic computing and made someone responsible for strategy is telling, says analyst Jasmine Noel, principal of JNoel Associates. IBM can ensure that different groups are working toward the same goals, for example by aligning Tivoli staff and hardware teams that both are developing management software.

Alan Ganek, former vice president of strategy for IBM Research, will lead the new autonomic computing unit. It will coordinate research and devel-

opment efforts among IBM's hardware, software and services teams working to devise smarter computing systems. The effort will include design centers where customers can develop and test autonomic technologies, IBM says.

Drake Emko, computer pro-

grammer the University of Florida's Northeast Regional Data Center in Gainesville, says some aspects of autonomic computing seem practical, but not all.

"I think autonomy is a good idea for certain things, such as rerouting network traffic to increase availability," Emko says.

Autonomic progress

IBM is weaving self-managing features into its entire product line. These are some highlights:

Management software: IBM's Tivoli systems management portfolio this month gained 26 upgraded products with autonomic capabilities, including Tivoli Identity Manager, which automates the deployment of user access rights, and Tivoli Configuration Manager, which enables integrated inventory and software distribution.

Database: DB2 Version 8, due to ship in November, will include new self-managing and self-tuning features such as Health Center, which monitors database operation, and Configuration Advisor, which automatically can initiate database configuration steps such as allocating memory and determining processor speeds.

Application server: WebSphere Application Server 5.0, due to ship in November, will include tools for automatically monitoring, analyzing and fixing performance problems.

Storage: IBM's storage portfolio will offer autonomic features such as policy-based storage management provisioning; transparent data movement between storage pools; transparent addition, deletion and redeployment of storage; and autorecovery of virtualization nodes.

Self-configuring and self-optimizing systems "are achievable, at least to a certain extent, and could save administrators countless hours of grunt work," he says.

But he's more skeptical of the self-healing and self-protecting goals of autonomic computing. "I'm not confident that autonomy in fundamentally unpredictable fields such as security and bug fixing are feasible goals," he says. It's hard to imagine an autonomic solution that can foresee all the problems that might occur in a system and protect against all types of attacks, Emko says.

Ruslan Zenin, senior system architect at UBS Bank in Ontario, echoed these sentiments.

"It looks perfect in theory," Zenin says. "However, when we jump back to reality we have to deal with many implementation-specific 'small problems' [that] might grow into monsters that could turn into showstoppers."

If the vision of autonomic computing were to be realized, Emko worries about the false sense of security it will give administrators and managers. "If a system can configure, run and maintain itself, administrators will have less incentive to learn the system in depth," Emko says. ■

Nortel

continued from page 1

should be a powerhouse in enterprise IP telephony, and they aren't."

Once considered a serious threat to Cisco's enterprise network dominance, Nortel has lagged in market share and new product offerings as the company has undergone radical restructuring and a shifting of focus from carrier to business customers. When Nortel laid off more than half its workforce and saw losses reach \$3.5 billion a year ago, many corporate customers became spooked.

"A year ago, I was worried about Nortel's focus on the enterprise," says Sheng Guo, CTO for the state of New York Unified Court System, which deploys a variety of Nortel switches. "Now, at least for the time being, they seem more committed."

Although Nortel is still in the red, its losses are half what they were a year ago and it expects to break even next year. The company says its enterprise business group is already profitable.

Nortel reorganized a year ago into three groups: long-haul optical, metropolitan-area and enterprise networks, and wireless. Nortel again reorganized earlier this

month, creating four groups — wireless networks, wireline networks, enterprise networks and optical networks.

IP phone support for Version 2.0 of Nortel's CSE 1000 has been boosted from 650 users per server to 1,000. IP trunking capabilities also were added to the IP PBX, letting CSE 1000s be networked together and managed as one system, with a total scale of around 10,000 users. Version 1.0 of the CSE 1000 could not be networked with other CSE servers to support more users than the 650 maximum.

Version 2.0 of the CSE 1000 breaks down into three parts: the Call Server, which provides call and connection services; the Signaling Server, an H.323-based gateway for connecting to other Signaling Servers; and the Succession Media Gateway, for providing dial tone to remote sites.

Optivity Telephony Manager software is included, which can be used to make adds, moves and changes across multiple CSE 1000 Call Servers.

Remote offices with IP phones that connect to a centralized IP PBX can now deploy Nortel's Media Gateway, a device that provides locally based dial tone and telephony features in case an IP WAN link to the central CSE 1000 server fails.

The New York Unified Court System is testing two new CSE 1000s by connecting more than 1,000 IP phones between courthouses in Queens and Manhattan. Guo says he plans to add more CSE 1000s to the court system's Nortel-based Gigabit Ethernet metropolitan-area network over the next year and a half, eventually bringing more than 5,000 court employees onto an all-IP-based phone network in early 2004.

"It's a big thing for us that [CSE 1000] Version 2.0 supports IP trunking," Guo says. "Before, we had two older [CSE] systems that were not integrated. Now we can manage them both as one PBX. IP trunking will also allow us to do disaster recovery of the phone system, which is especially important to us after last year's events."

As his primary workgroup switch, Guo will integrate the BayStack 460-24T-PRW — a 24-port 10/100M bit/sec managed Ethernet switch that provides power to devices based on the pending 802.3af standard for inline power. The switch is Nortel's first inline power product.

"Inline power is a requirement for us," he says. "Having to plug the phones in with power adapters in the past was

unreliable," because a power outage would have taken the voice and data networks down.

CallPilot 2.0 is the latest version of Nortel's unified messaging server software that integrates e-mail and voice mail messages into one in-box. New capabilities include software that lets users access text e-mails over a voice connection by having the server read them via a text-to-speech engine. The new CallPilot also increases the number of users from 1,500 to 7,000.

Current Analysis' Riggs says the remote site survivability features added with the CSE 1000 and the Succession Media Gateway bring Nortel's IP telephony products up to par with competitors such as Cisco and Siemens. Cisco introduced its Survivable Remote Site Telephony last year, and Siemens is expected to announce remote office survivability for its HiPath 5000 IP PBXs next month.

But playing catch-up in the IP telephony market is not a role voice leader Nortel should be taking, Riggs says.

"They need to show they are a factor in this market other than coming out with 'me-too' product announcements — they need to be more of a leader," he says. ■



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Convergence

continued from page 1

with hubs, and you want IP telephony, an upgrade is probably in order.

Having LAN switches that support quality-of-service (QoS) technologies, such as 802.1p traffic prioritization, virtual LAN tagging or Differentiated Services, also is important. Many IP telephony vendors build QoS into their equipment, so a network lacking QoS-enabled switches also is a candidate for an upgrade if IP telephony is your goal — though there are users who have QoS-capable switches and get by without flicking the QoS switch, preferring to just tolerate the occasional snaps and pops on the line.

Do I have to throw out my PBX?

Companies such as Cisco and 3Com, which have no traditional PBX installed base, have pushed their customers to make a wholesale swap from circuit-switched telephony to IP. Avaya, Siemens, Nortel, NEC and other sellers of traditional PBXs offer IP cards for their systems as a way to "IP-enable" them. IP enabling a PBX lets customers extend their PBXs to branch offices via IP WAN connections, or even to IP or digital phones inside a corporate headquarters.

What's the voice quality like?

It can be as good or better than standard voice quality. But quality is in the ear of the beholder, so the answer depends on how discriminating your company's end users are. Some companies don't worry much about the quality of VoIP for certain internal calls. But if the calls are involved directly with revenue generation, companies typically have a higher standard.

If you want to measure the quality of a VoIP call, there are methods, including the Median Opinion Score (MOS) test, endorsed by the International Telecommunications Union (ITU). MOS involves gathering people into a room to listen to calls, after which group members rate quality on a scale from 1 to 5. Voice-quality testing tools based on computer algorithms also are available from vendors such as Agilent and Empirix.

Is VoIP really less expensive?

You can make a good case for it, but it's hard to give a blanket answer. Theoretically you can get rid of some phone trunks if you use a single network for all traffic. You can avoid expensive toll fees, particularly for international calls. You can cut the administrative cost of moving phones when someone changes offices or someone is hired or fired. You might get by with fewer employees if you merge data and

telecom staffs. But you have to factor in the cost of new equipment, increased traffic on your data network that can require bigger, more expensive links to service providers and higher-priced services based on stringent service-level agreements that voice requires. Some users worry that because VoIP is relatively new, software updates will be more frequent than with traditional PBXs, making the maintenance of IP PBXs more expensive. You have to crunch your own numbers and determine whether it makes sense for you.

If the power goes out, does the VoIP network stay up?

In the traditional voice world, phones are powered by the PBX, which is usually powered by a back-up power source, which can sustain the system through most outages. Running voice over a LAN introduces more devices into the voice network equation — and that means there are more points along the network that can be affected by an outage and create phone service problems.

One preventive measure to take is to put back-up power supplies on all LAN switches that connect IP phones and IP PBXs. Most crucial to ensuring phone connectivity in an outage, however, is to make sure phones are powered over their network connections. Vendors such as Avaya, Cisco and Nortel sell Ethernet switches that can deliver electrical power along with Ethernet LAN connectivity.

What happens to VoIP if the network fails?

In VoIP deployments where a centralized IP PBX controls remote-office phones, the WAN connection is a voice and data life-line. If the link goes down, dial tone as well

as Internet and network access can be lost. Some vendors include technology in their routers or remote gateways that lets remote IP phone users to continue making phone calls through a back-up T1 or ISDN line if the main links to a central IP PBX are lost.

Do I have to buy special phones?

If you do VoIP to the desktop you need IP phones, and not just any IP phones. Even though all LAN telephony gear is Ethernet-based, it does not yet offer the same level of interoperability as Ethernet computer networking. This is because most vendors have proprietary protocols and software running on their phones and call servers that don't work with those in others' products. Some IP phone systems support standards protocols such as H.323, Session Initiation Protocol (SIP) and Media Gateway Control Protocol. This lets users purchase commodity IP phones from vendors such as Pingtel, Polycom and Symbol

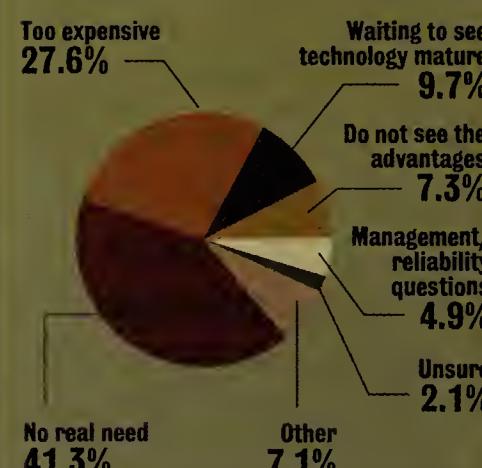
Catching on
More than
40% of U.S.
businesses with more
than 500 employees have
begun to implement IP
LAN telephony systems.

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VoIP inhibitors

IDC and Network World surveyed 101 companies to find out why they are not buying into VoIP on LANs.

**Technologies.**

Many vendors also have gateways that allow analog or digital sets to be used on their IP-based call servers.

What protocol do I use?

The choice now is between the tried-and-true and the cutting edge. H.323 products are available, stable and deployed. SIP holds promise for new and more dynamic applications, but has not been put through the paces in many corporate networks.

What cool new capabilities do we get?

Tops on the list is unified messaging. Most VoIP gear makers have crafted products that let end users read e-mail and listen to voice mail from a single in-box, integrated with applications such as Microsoft Exchange and IBM's Lotus Notes.

Telecommuters are benefiting from IP telephony also. Workers with home VPN connections and IP phones (or PC-based "softphones") can extend their four-digit extensions to the home office.

Many IP phones are becoming more like thin IP clients than phones. Many come with LCD displays that let users interface with Web-based applications or even surf the Internet. Some users enable IP phones to tap into back-end XML or Java application servers.

How secure is VoIP?

VoIP gear is based on servers that are as susceptible to attacks as any others. They are vulnerable to viruses, so a regular regimen of updates and patches is required. Many of these devices have Web-based management, which also must be monitored and remedied for bugs and vulnerabilities.

Isn't it hard to get IP voice through a firewall?

Yes, but this can be worked out. Unless every phone at a site has a public IP address, the firewall will change the source IP address as packets pass



from the phone and out onto the WAN IP link. But the firewall only does this in the headers, not on internal parts of the packet. When IP phone gear picks up that the source addresses in different parts of the same packets don't match, it drops the packets. Firewalls and firewall add-ons are being developed so they can take care of this problem, but it's something you have to know about and deal with. Another firewall problem is that because they are designed to keep out all but authorized traffic, they would keep out legitimate inbound phone calls as well. A port could be left open as a hole through which to initiate such calls, but your security experts might not like that. New gear called session controllers establish persistent connections from outside firewalls to IP phones inside firewalls to create a more secure hole for inbound calls.

If I'm running voice on what was previously just a data network, what becomes of my telecom staff?

This is a tricky one. Some IT executives who propose transitions to IP voice cite the cost savings their companies will experience by laying off the telecom staff. In an effort to save their jobs, the telecom staff members often respond by attacking the viability of IP voice in an effort to put off the projects. Successful transitions have included a recognition of this conflict and dealt with it. In some cases, cross-training IT and telecom staff has resulted in much better phone and data service. This merging of staff might not be possible in all cases, but IT executives should anticipate that the conflict will come up and plan for how to deal with it.

What happens to QoS when I pass traffic off to my service provider?

It could go right out the window unless you make arrangements with your carrier. You need to let the carrier know that you are transporting voice to its network and ask how the carrier can guarantee the traffic will get priority treatment.

The carrier might have a network that uses the same priority markers you use on your LAN or might be able to map your priority scheme into its priority scheme. The capability will likely cost you extra, but the service should come with measurable service-level guarantees to give you some degree of comfort that voice will be treated well.

Does 911 still work?

It had better. The technology exists so that when an end user takes his phone and moves it to another office, the 911 system knows about the new location, and emergency personnel can find the person. Depending on whose gear you buy, updating the location database might require manual entries or it might

limit the number of times a phone can be moved per day. ■

**Integrating Security**

Integrating **Security** Into the Network The New Strategy for Defending Your E-business

What is the risk of poor network security to your business? An average of nearly US \$2 million per year, as reported by respondents to a recent 2002 survey by the U. S. Federal Bureau of Investigation (FBI). Threats to network security are a continuous and complex challenge for your enterprise. These threats will continue to grow—and new threats will emerge—as your networks become more open, extend to more locations, enable more applications, and support new technologies such as mobility and IP telephony.

The changing demands on network security can already be seen in the rising number of computer breaches. In the CSI/FBI's 2002 *Computer Crime and Security Survey*, 90 percent of respondents (primarily large corporations and government agencies) detected computer breaches within twelve months, with 80 percent acknowledging financial losses due to these breaches.

While still a critical part of an overall security solution, firewalls and other standalone network security products are no longer adequate for protecting your network from internal and external attacks. Both network and security professionals are discovering that today's networks need a new, comprehensive approach to security, one in which multiple security components overlap each other in a flexible, layered solution.

Cisco Systems is leading the industry by delivering the first solutions for comprehensive network security: a set of five new modules that will integrate essential security functions on the Cisco Catalyst 6500 Series of multilayer switches. Individual modules provide up to gigabit performance for firewall, intrusion detection, secure sockets layer (SSL) processing, network analysis management, and virtual private network (VPN) capabilities. These modules add to the services for increased business resilience and availability brought to Catalyst switches by the existing Content

Switching Module (CSM). By supporting a comprehensive choice of security functions, the Cisco Catalyst 6500 Series modules enable the modular, flexible deployment of scalable security necessary to your vital networks, applications, and business operations.

Why Embedded, Integrated Security?

There are many sound reasons to adopt an integrated design for network security, including:

- The continuing variety and volume of network threats, which can only be addressed by a “defense-in-depth” strategy, supported by multiple and cohesive security components.
- Yesterday's security products were designed for dedicated enterprise networks with a limited number of connections to other networks. Today's interconnected networks have hundreds, and sometimes thousands of interconnections to other networks—requiring security products that can support an architecture for many different network designs.
- As networks continue to grow and change, the security design must keep pace—transparently—while enabling your network to continually deliver the required scalability and performance.
- Integrated security supports the smooth functioning of your entire e-business infrastructure, assuring that security functions do not become a hindrance to sales and other online activity.



About the Cisco Catalyst 6500 Series Switches

Cisco Catalyst 6500 Series Switches deliver highly available, secure, and converged network services for enterprise and service provider networks. These switches support gigabit scalability, high availability, rich services, and multilayer switching in backbone, distribution, and wiring closet topologies as well as data center environments. The Catalyst 6500 Series also offers exceptional scalability and value by supporting a wide range of interface densities, performance, and integration of powerful services modules.

By combining superior control-plane and packet-forwarding scalability with a rich set of intelligent services, the Catalyst 6500 Series gives enterprises a foundation for converged voice/video/data networks and e-commerce services.

- Network operations and management are simpler with integrated security, with the associated benefits of lower costs.
- A comprehensive, embedded, and integrated security design is more compatible with initiatives for new, interconnected network technologies such as VPNs, wireless, and IP telephony.

True integration means more than simple interoperability among security components; pervasive network security requires a comprehensive design. The SAFE Blueprint from Cisco gives businesses of all sizes a comprehensive set of best practices for creating a secure, defense-in-depth network. The integrated

security modules for Cisco Catalyst 6500 Series switches are based on the SAFE Blueprint, assuring a good fit into your overall network architecture and security strategy.

Where is the logical point for integrating security capabilities? In the network infrastructure. The campus switch enables several advantages because of its key role in the network infrastructure. These advantages include:

- Higher performance of security functions without any degradation of switch performance
- Increased network flexibility, scalability, and availability
- Protection of the network core because the Cisco Catalyst 6500 Series switches become self-protecting
- Reduced overall cost of network ownership, through the ability to leverage existing network resources
- Seamless converged networks with security for all network services
- Increased collaboration among networking and security operations, a critical requirement for defense against today's increasingly sophisticated attacks

Integrating Security with Cisco Catalyst 6500 Series Switches

The Catalyst 6500 Series security modules will support two configurations:

- Multiple security functions on a single switch, through the installation of the appropriate modules.
- Dedicated and enhanced processing of a single security function, such as intrusion detection, through installation of multiple modules of the same type in a single switch.

Cisco Catalyst 6500 Series Services Modules

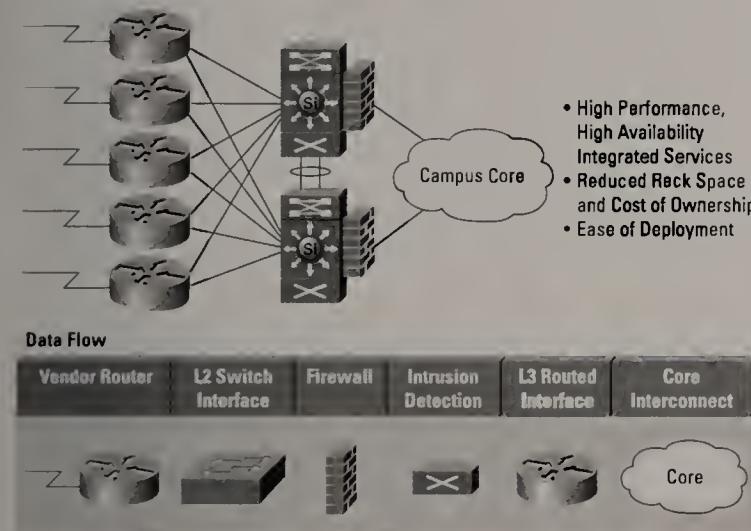
Description

Firewall Services Module	Implements firewall protection with up to OC-48 or 5 Gbps aggregate throughput and support for up to 1 million concurrent connections. This module is based on the award-winning Cisco PIX® Firewall technology.
SSL Services Module	Secures Web transactions with support for up to 60,000 concurrent connections and up to 4,000 new connections per second.
IP Sec VPN Services Module	Provides secure, gigabit-rate VPN termination and traffic encryption to connect remote offices and mobile users.
Network Analysis Module	Monitors network activity in a gigabit environment, with a Web-based traffic analyzer to quickly identify potential security threats in the application layer.
Content Switching Module (CSM)	With a full set of Layer 4-7 features, the Content Switching Module (CSM) integrates advanced content switching into the Catalyst 6500 Series to provide high-performance, high-availability load balancing of firewalls, web servers, caches, and other network devices.
Intrusion Detection System (IDS) Module	Processes network traffic directly from the switch backplane to detect and mitigate network intrusions.



Figure 1.

For an extranet, the Catalyst modules can replace standalone security devices.



All modules are based on Cisco's powerful node switch processor (NSP) technology, which supports greater performance, flexibility, and functionality than competitive products based on application specific integrated circuit (ASIC) technology.

The Catalyst 6500 Series security modules can be managed by Cisco network management products as well as selected applications from Cisco ecosystem partners. The integrated security design for the Catalyst 6500 Series is compatible with standalone security appliances from Cisco, including Cisco PIX Firewalls and Cisco Intrusion Protection products.

Two types of enterprise networks provide examples for applications of integrated security. The first example, shown in Figure 1, is a vendor extranet that replaces separate devices for firewall and intrusion detection with the appropriate modules on a Catalyst 6509 switch. In this example, the enterprise can eliminate the costs and management burden of separate devices while realizing greater operational efficiency and return on investments in the Catalyst 6500 Series switches.

Will Security Processing Impact Switch Performance?

Given the ever-growing traffic volumes and demands for switch services, network managers are understandably wary about adding new functions to a campus switch. Security functions require high processing capabilities, leading to a concern about their impact on switch performance. Cisco has addressed this concern by developing security modules that no longer require tradeoffs in network performance for increases in security. The newly released Cisco Catalyst 6500 security modules offer the fastest performance available today for security throughput, assuring no significant impact on switch performance.

From a network manager's perspective, additional advantages of security integration include:

- An enhanced networking solution through integration of a high-performance Catalyst 6500 Series switch with market-leading security technology
- Protection of investments in Catalyst and NSP technologies with no compromise in security functions or network performance
- Easy integration into existing Cisco Catalyst 6500 Series switches
- Scalable and flexible design for adding security functions as needed
- Tighter integration of security with network services such as traffic policing and shaping

Cisco Catalyst 6500 with Modules



Why Should I Place Security Functions in the Campus Switch?

A natural concern of security managers is that integrating security functions at a single point—the campus switch—presents a risk in itself. Yet the advantages of integration present a strong case for making the shift from standalone devices. For a security manager, the advantages of integration include:

- A modular design that enables high scalability and significantly reduced costs, operational complexity, and management burden compared to standalone devices
- Security services that are adaptable to a wide range of network topologies through integration of diverse security modules
- Security modules deliver performance significantly higher than the levels offered by standalone devices
- Performance of discrete security functions can be increased by installing multiple modules of a single type (e.g., firewall)
- Network growth and change can be accommodated easily by adding new modules, as an alternative to adding standalone devices

Choosing an Integrated Security Solution

Cisco's integrated approach to network security reflects networking leadership that will enable your business to more effectively meet security needs today and well into the future. Cisco is the only vendor currently offering an integrated design and campus switch modules for all essential aspects of network security.

Together, the Cisco Catalyst 6500 Series switches and integrated security modules deliver an outstanding solution for campus networking and embedded, integrated network security.

Cisco Systems and WebEx: Extending Integrated Network Security with the Catalyst 6500 Series

Cisco customer WebEx Communications, Inc. has been testing the new firewall, VPN, and SSL modules for the Cisco Catalyst 6500 series. "Our testing of the firewall module so far has shown significantly faster sustained throughput than any other device we have found with similar functionality," said Hesham Eassa, Manager of Network Engineering for WebEx. This higher level of firewall performance will enable WebEx to deploy more firewalls than would be the case with standalone devices, an important consideration for this operator of a large, global communications network.

Headquartered in San Jose, California, WebEx provides interactive conferencing services over the telephone or Web. These services are supported by a Cisco AVVID (Architecture for Voice, Video and Data) network that integrates voice, video, and data for enterprise activities such as meetings, presentations, training, and collaboration.

Talk LIVE to Cisco switching and security experts and learn how integrated security can help protect YOUR network. Register at www.cisco.com/go/SecurityTechTalk

For More Information:

Cisco Catalyst 6500 Series: www.cisco.com/go/Catalyst6500
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Infrastructure

■ TCP/IP, LAN/WAN SWITCHES
 ■ ROUTERS ■ HUBS
 ■ ACCESS DEVICES ■ CLIENTS
 ■ SERVERS ■ OPERATING SYSTEMS
 ■ VPNs ■ NETWORKED STORAGE

Foundry pushes copper Gig

■ BY PHIL HOCHMUTH

SAN JOSE — Foundry Networks next month is expected to introduce copper Gigabit and Layer 4 to Layer 7 switches aimed at users looking to bring high-speed links to desktops and server farms.

The new Edgelron 24G is a fixed-configured copper Gigabit switch that could let businesses take advantage of low-cost Gigabit PC and server network interface cards (NIC) for running high-bandwidth applications, such as IP video over Gigabit Ethernet. The modular FastIron3208RGC provides high-density copper Gigabit for larger data centers, with 10G Ethernet uplink options.

Foundry's ServerIron 100 series is aimed at customers looking for a chassis-based server or firewall load-balancing switch for improving data center server availability or for making security appliances, such as firewalls and Secure Sockets Layer (SSL)

Foundry's FastIron 3208RGC features:

- Gigabit over copper.
- Layer 2 and Layer 3 switching.
- 32 100/1000 auto-sensing ports.
- Support of a 10G Ethernet module.



accelerators, more reliable and fast.

All three switches are expected to be unveiled at NetWorld+Interop 2002 in Paris, which runs from Nov. 4-7.

Foundry's FastIron 3208RGC is a four-slot modular switch with 40 100/1000Base-T copper ports on two blades, and eight mini-gigabit interface converter (GBIC) ports on its management module. One slot is open for additional Gigabit or 10G

Ethernet ports. The midsize modular box will compete with Cisco's Catalyst 4000 and its new Catalyst 6503 series boxes and Extreme Networks' Alpine.

The ServerIron 100 series of Layer 4 to Layer 7 switches will come in three flavors: the 2402 version with 24 10/100 ports and two fiber Gigabit ports; the 8GC02F with eight Gigabit copper and two fiber Gigabit ports; and the 8G model,

with eight fiber Gigabit ports. All three models can handle 7 million concurrent Layer 4 to Layer 7 sessions, and support Foundry Web switching features such as Web server, SSL and firewall load-balancing, and Syn-Guard and DoS Mitigation, for stopping network-based attacks.

Foundry says its new copper Gigabit and load-balancing switches target businesses with 1,000 to 9,999 employees — an area where the company says it sees

See Foundry, page 22

3Com knows jack — Network Jack

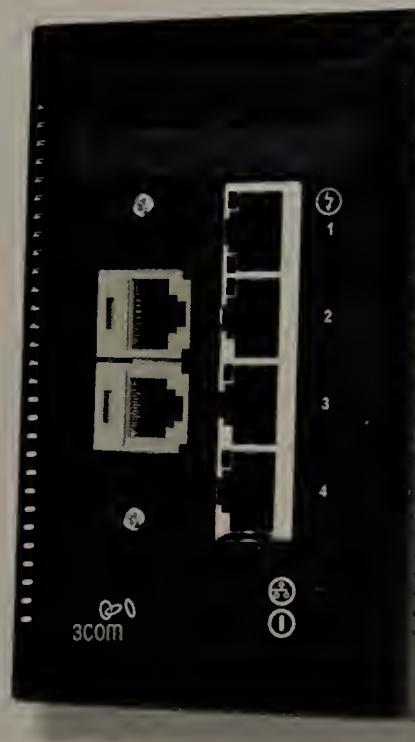
New network faceplate/switch could save cabling costs, connect IP phones.

■ BY PHIL HOCHMUTH

SANTA CLARA — 3Com this week is releasing an SNMP-manageable version of its Network Jack that is intended to increase the number of Ethernet ports in cubicles or office faceplates while not requiring company's to pull costly new wires to desktops.

The network faceplate replacement product is an upgrade to the NJ100, released earlier this year. The new version can be managed via SNMP-based tools such as Hewlett-Packard's OpenView, CiscoWorks or 3Com's Network Manager Solution software. SNMP also can be used to deactivate ports on an NJ200 deployed in a common area, such as a conference room or school classroom, after business hours to prevent unauthorized network access. The NJ200 Network Jack has four 10/100M bit/sec ports.

The NJ200 can save users money in the area of cable installations, 3Com says. Instead of pulling more network lines to support more ports for desktop LAN phones or other devices, the NJ200 can be used to link up to four devices to a LAN over a single cable from the desktop to the wiring closet.



3Com's NJ200 Network Jack includes a four-port managed switch.

In addition to providing four switched LAN ports, a single port on the device also supports the proposed IEEE 802.3af

inline power standard, which could be used to power voice-over-IP phones, wireless LAN access points or other devices that can be powered over Ethernet connections. The NJ200 can be powered over an 802.3af-based switch, supported by companies such as Avaya, Nortel and Cisco, or via Cisco's proprietary in-line power technology on its Catalyst switches.

About a dozen NJ200 devices are slated for installation at Atlantic Union College in Lancaster, Mass., where IT staff will connect groups of three and four PCs in offices and student PC labs to the LAN.

"Before, we just had dumb hubs on desks, which took up a lot of room," says Peter Conrad, an IT technician at the school. "Now we'll have managed switch ports down to each PC."

The NJ200s will connect back to HP Procurve switches in the wiring closets and LAN backbone, Conrad says. He adds that he is looking into powering the school's 3Com wireless LAN access points over the NJ200 devices.

The NJ200 Network Jack is available for \$220 for a single unit and \$4,075 for a pack of 20.

3Com: www.3com.com

Short Takes

■ **Stratus** believes in **Windows**. The company last week said it is backing one of its fault-tolerant servers with a \$100,000 guarantee that the system will not crash when running Microsoft's Windows 2000 Advanced Server. Under the terms of the Perfect Performance program, Stratus will pay any customer who experiences downtime from an operating system or hardware failure on its ftServer 6500 product. Stratus makes strengthened versions of Intel-based servers that include either double or triple the number of standard components to ensure the system will not go down. If a processor fails, the Stratus servers have spare chips to pick up the workload. Users who want to take advantage of the deal will need to purchase an ftServer 6500 system with triple redundant components and Stratus' support services. With four processors, this system costs about \$150,000. www.stratus.com

■ **Intel** will invest \$150 million in companies developing 802.11b and other wireless network products, the chip maker said last week. The money will come from the \$500 million Intel Communications Fund established three years ago. The fund will invest in companies developing hardware and software products and services that enable user-friendly and secure wireless network connections, simpler billing procedures, a robust infrastructure and new ways to connect while on the road. Intel says, 802.11b, or Wi-Fi, is a standard for wireless LANs operating in the 2.4-GHz spectrum offering transmission speeds up to 11M bit/sec. An increased uptake of wireless LAN will benefit Intel. The chip maker in the first half of next year will launch a chip, code-named Banias, that has built-in support for 802.11b and 802.11a. 802.11a is a standard for wireless LANs operating in the 5-GHz frequency range with a maximum data rate of 54M bit/sec. www.intel.com

TOLLY ON TECHNOLOGY

Brian Tolly



Ah, yes, another switch throughput performance test. And look — this vendor, too, says its product also performs at wire speed. As I thumb through the vendor's marketing collateral, I carefully read the test methodology to gain a better understanding of the conditions that the vendor meets to achieve wire-speed performance. You should, too.

My cause for alarm is that all throughput tests are not created equal, a common misconception. Configurations for throughput tests come in all shapes and sizes: unidirectional, bidirectional, full-mesh, many-to-one port pairing and one-to-many port pairing. Within that collection of possibilities, one must take into consideration the type of system being tested. Is it a stackable or a chassis-based system? Has the test been designed to show the capabilities of the line card (in a

Interpreting throughput testing — read the fine print!

chassis-based system), or is it demonstrating the switching fabric of the backplane or a hybrid of both?

Each test is valid — yet each one has a different meaning in the results it delivers. Take unidirectional tests. We are living in a world where everything is full-duplex (bidirectional) in nature. This is one reason why we have moved away from single collision domain hubs to switches. Consequently, unidirectional tests today have limited value.

Full-mesh, many-to-one port pairing, one-to-many port pairing ... what do they all mean? Am I comparing apples to apples when comparing these test results? The answer is, it depends. It depends on your intended application. A port-pairing test on 10G Ethernet interfaces is acceptable in an enterprise product where the 10G Ethernet uplink ports will be used to connect buildings. However, in a service provider-class device, a full mesh of 10G Ethernet ports might be more appropriate to demonstrate the nonblocking architecture of the device.

Workgroup switches that contain mixed topologies (Fast Ethernet with Gigabit Ethernet uplinks) are more appropriately

My cause for alarm is that all throughput tests are not created equal, a common misconception.

tested using a many-to-one or one-to-many port-pairing configuration. The collection of workstations (Fast Ethernet ports) will not suffer any degradation when exiting the workgroup switch on the Gigabit Ethernet uplinks in a nonover-subscribed scenario. By this I mean that the configuration is 10 Fast Ethernet ports to a single Gigabit Ethernet port and vice versa, with any remaining Fast Ethernet ports thrown into a full mesh among themselves. This type of test configuration also adequately exercises the switching fabric because every packet must hit the switching fabric to traverse the different topologies. This, of course, depends on the vendor's switch design.

Aggregation switches can be a little

tricky. These switches tend to be chassis-based, where one needs to examine the specific needs of the speeds and feeds. We need to look for intramodule performance (where switching happens within a single line card) and intermodule tests that exercise the backplane. So, it is not unreasonable to see a configuration of an eight-port line card, two of which are used for intermodule tests and six others for intramodule full-mesh tests.

Like workgroup switches, look for core switches tested in a full-mesh configuration that fully exercise the switch fabric to reveal a nonblocking total capacity.

In all switch tests, there is value to be had. Read the marketing collateral fine print and seek out the exact conditions that allow for the vendor's wire-speed claims. Only then will you really understand if the product truly fits your needs or whether the marketing collateral contains more marketing spin than reliable product performance data.

Tolly is a senior engineer with The Tolly Group, a strategic consulting and independent testing company in Manasquan, N.J. He can be reached at btolly@tolly.com.

Cisco acquires Psionic Software

■ BY PHIL HOCHMUTH

Cisco last week acquired intrusion-detection system software maker Psionic Software for \$12 million in stock.

The move, Cisco's fifth acquisition this year, is aimed at improving Cisco's IDS product line, which includes hardware-based appliances and server-based software products. Cisco says it hopes to introduce new IDS products based on technology from Psionic that will reduce the amount of false alarms in IDS systems. Cisco says Psionic soft-

ware could help reduce such alarms by up to 95%.

This could help companies by letting IT and security staff take action only on legitimate network-based security threats instead of wasting resources and time on nonthreatening network events that IDS misidentifies.

IDC estimates that IDS products and services will account for almost one-fifth of the \$13 billion IT security market next year.

Psionic was founded in Austin, Texas, in 1996. Its products include ClearResponse, an IDS analysis software product; and

TriSentry, a suite of port-scanning detection and host-based IDS tools. The company's eight employees will move to Cisco's VPN and Security Services business unit. Products from this group include PIX firewalls, IDS host sensors, and the 3000 and 7000 series of VPN routers, concentrators and hardware clients. ■



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Sun increases blade power

■ BY TOM KRAZIT

Sun is phasing out its 900-MHz Sun Blade 2000 high-end workstation with a faster-processor model, but the upgrade will not affect the Unix machine's entry-level price, the company said last week.

The new Sun Blade 2000 model will feature a 1.015-GHz UltraSparc III Cu processor, and cost \$11,000 in an entry single-processor configuration, the same entry price as the 900-MHz processor model, the company says. The workstation also is available in a dual-processor configuration.

The Sun Blade 2000's high-end model carries a higher entry price and features a 1.05-GHz UltraSparc III processor.

The 1.015-GHz processor has shipped in Sun's Sun

Fire 280R rack server for about a month and a half, but this marks its first appearance in a workstation, says Brian Healy, group marketing manager for client and technical market products at Sun.

Sun Blade 2000 or Sun Blade 1000 users with slower processors will find it easy to upgrade to the 1.015-GHz processor because the processors on the Sun Blade 2000 are contained in modules and easily can be swapped, Healy says. The 1.015-GHz processor will be available as an upgrade option for \$5,750, he says.

The 1.015-GHz processor is available worldwide as of last week, through Sun's Web site or through Sun resellers, Healy says.

Krazit is a correspondent with the IDG News Service's Boston bureau.

Foundry

continued from page 21

more network expansion than that in large or Fortune 100 companies, where the company's high-performance chassis have been targeted.

The FastIron 3208RGC and ServerIron 100 fill holes in Foundry's product line between its low-end stackable copper Gigabit and load-balancing boxes, and its larger chassis-based BigIron and ServerIron products, observers say.

The Edgelron 24G is a stackable 24-port switch with 10/100/1000M bit/sec copper connections. Four mini-GBIC slots also are included for fiber or copper uplinks. The Layer 2 box supports 802.1p/Q traffic prioritization/virtual LAN tagging and the 803.1W standard for Rapid Spanning Tree Protocol (RSTP), which lets a Layer 2 link failover to a redundant link in less than a second, compared with Spanning Tree Protocol, which can take up to 30 seconds to reroute around a bad link.

The Edgelron 24G will compete with stackable copper Gigabit boxes from Cisco, 3Com, Extreme Networks, Nortel, Hewlett-Packard and Dell.

With its Edgelron 24G, Foundry says it is countering switch vendors offering low-priced copper Gigabit products — such as Dell and Netgear, which offer Gigabit

at less than \$100 per port — with extra features such as RSTP and quality of service. The Edgelron 24G costs about \$200 per port.

Foundry joins the Gigabit bonanza from vendors as prices continue to fall fast. According to IDC, the average price for a fixed-configured Gigabit Ethernet switch port has dropped from about \$800 per port in 1998 to about \$150 to \$200 per port this year. During the same time, Gigabit NICs also have come down from an average of \$500 to the \$200 range today. Many companies, such as Dell, HP and Apple, include built-in 1000Base-T connections on their PC motherboards.

The Edgelron 24G and the ServerIron 100 series will be available next month for \$6,500 and \$35,000, respectively. The FastIron 3208RGC is available now starting at \$27,500. ■



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■ PRODUCTS, SERVICES AND STRATEGIES
FOR TYING TELEWORKERS TO THE ENTERPRISE

Fiber to the home market in gear

Towns are turning to optical technology for super-fast, future-proof communications.

■ BY TONI KISTNER

It's a bit of a chicken-and-egg thing. We won't see strong demand for residential broadband access until there are applications people want to use it for. But applications won't be created and sought after until enough people are willing to subscribe. One way to break the cycle is to offer ultrafast and reliable Internet connections, multiple phone lines with enhanced features, video, telemedicine and education services, all for a reasonable price.

Vaulting over traditional broadband technologies, fiber-optic technology delivers Internet, voice and video at lightning-fast speeds — from 2M to 100M bit/sec and beyond. On a fiber-optic network, data is transmitted as light impulses along thin strands of silica glass. Unlike copper cabling, optical fiber is not subject to electromagnetic interference because it uses light, not electricity. Moreover, fiber optics can

transmit data over much longer distances; 6.2 to 49.6 miles over single-mode fiber-optic cabling vs. a few thousand feet for copper cabling (see graphic).

Fiber-optic technology has been around since 1970 when Corning invented the optic cable. Most telephone companies' networks are fiber-based. A handful of upscale residential developments, mainly in Texas, Arizona and California, have even enjoyed ultrahigh-speed data, video and voice applications via PCs and TVs for a number of years. Built from the ground up with fiber cabling or a mix of fiber and coaxial cables, such "connected home communities" also provide a host of nondigital amenities such as parks, playgrounds, golf courses and restaurants.

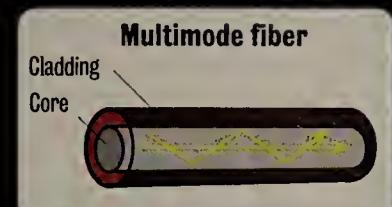
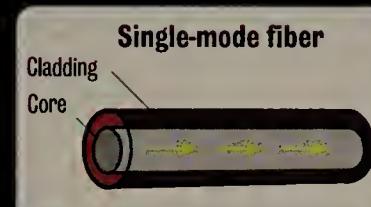
Betting on the future

Since the advent of fiber to the home (FTTH) technology, the question has been how to bring it to existing communities. Who's going to pay for it? Does the expense justify the benefit? Will residents subscribe? A handful of municipal governments are finding out first-hand as they embark on ambitious fiber-optic projects. Many of the areas that see the most benefit are remote, are ill-served by incumbent cable and telephone providers, and have trouble attracting employers. A list of FTTH projects is at www.nwfusion.com, DocFinder: 2832, but several projects are cropping up in Colorado, Utah and Washington state.

A new report by Render Vanderslice & Associates, "Fiber to the home and optical broadband, 2002," predicts substantial market growth in the coming years. Even today, the number of households with access to FTTH technology has almost quadrupled since last year, from 19,400 to 72,000 homes nationwide, and the numbers will keep scaling upward until they reach between 800,000 and 1.4 million homes by September 2004.

The report weeds out hybrid fiber coaxial cable installations and projects only in the early planning stages, says its author Mike Render. Render conducted 49 interviews with vendors and other experts and conducted 241 phone calls with representatives of various FTTH projects in the U.S. and Canada. And to get a sense of market awareness, Render conducted a survey of key FTTH markets, such as large housing developers, public utility companies and incumbent and competitive local ex-

Of glass and light



A The two basic elements of optical fiber are the core, or the axial part of the optical fiber, is the light transmission area of the fiber. The cladding encases the core. The difference in refractive index between the core and cladding is less than 0.5%. The refractive index of the core is higher than that of the cladding, so that light in the core strikes the interface with the cladding at a bouncing angle and is trapped in the core.

B A mode is a defined path in which light travels. A light signal can propagate through the core of the optical fiber on a single path (single-mode fiber) or on many paths (multimode fiber). The mode in which light travels depends on geometry, the index profile of the fiber and the wavelength of the light. Single-mode fiber has the advantage of high information-carrying capacity, low attenuation and low fiber cost, but multimode has the advantage of low connection and electronics cost that might lead to lower system cost.

C Generally, light is sent down the fiber in the form of a pulse. As pulses travel down the fiber, they spread out. This spreading is known as dispersion. Dispersion is undesirable because it can cause bit errors when the signal reaches the receiver. To avoid bit errors, it is necessary to condition the signal using dispersion compensation or to regenerate the signal using a repeater. The signal must be regenerated before the occurrence of any errors.

Short Takes

The Internet Home Alliance this week is announcing eight new members, including ADT, CompUSA, IBM, Samsung, Sunbeam and Symbol Technologies. The group, formed to advance the home technology market, says the new members will collaborate on pilot projects to help spur growth in the nascent market, using technologies that in time will help make IT more transparent. www.internethomealliance.com

Netgear announced last week a Gigabit Ethernet switch for small businesses. Geared to graphic design firms, video production studios, print shops and law offices that require high bandwidth, the **GS108** is an unmanaged copper Gigabit Ethernet switch with eight 10/100/1000M bit/sec ports. The device provides an auto-uplink feature and works on PC and Macintosh networks. The GS108 is available for about \$700. www.netgear.com

change carriers.

Even with strong numbers, the applications for which we'll want (and need) fiber are fuzzy. "If history is any guide, some of the most important future broadband applications will be ones that are not yet on the list of conceived possibilities," the report says. Beyond gaming, movies and teleworking with full-motion videoconferencing, other intriguing applications could include 3-D TV, virtual art museums, and "narrow casting," the ability to deliver thousands of TV channels, each focused on a niche audience. For a list of possibilities, see DocFinder: 2833.

But even if we won't see such applications for many years, Render says households will need ultrahigh bandwidth in

coming years to support high-definition television (HDTV) and to run applications on multiple displays simultaneously. For household members to watch a movie on one HDTV, play interactive games on a second, participate in a videoconference on a computer and watch a lecture on demand on a fourth display, the house will need a 58M bit/sec downstream and about 36M bit/sec upstream connection.

Building Utopia

No doubt Thomas More would have considered 2M bit/sec data rates Utopian, but in Utah, UTOPIA stands for the Utah Telecommunications Open Infrastructure Agency, the cornerstone of a marketing

See Fiber optics, page 26

Fiber optics

continued from page 25

strategy by Paul Morris, UTOPIA's executive director. Launched in April 2000, the agency is embarking on the largest FTTH project in the U.S. Seventeen municipalities in the state have joined, and the agency expects

more in the coming months. The participating towns, from Tremonton in the north to Cedar City in the south, represent 75% of Utah's population.

UTOPIA is based on a wholesale or "open access" model, whereby the municipalities own the infrastructure and ISPs sell services on top of it. In some states, communica-

ties also sell the retail communications services themselves, competing directly with the local phone and cable companies. But Utah and some others are prohibited by law from competing with the incumbents. Even so, Morris says the open access model is superior because it drives competition.

"With the wholesale model, ISPs will com-

pete and innovate," he says. "But with the retail model, the governmental entity sells the services. It becomes the third monopoly. We have retail water, sewer and power, but we also have wholesale streets and airports. You want the Jet Blues and the Southwest Airlines to be free to innovate. You want the government to own the airport but not to run an airline."

Although it's too early to share the data, Morris says a recent feasibility study gauging community interest and attitudes about existing service providers "looks very good." He says he expects providers will offer 2M bit/sec synchronous Internet service, two phone lines, video and 150-channel digital TV for about \$100 to \$120 per month.

"Take rate" is the percentage of homes and businesses passed that subscribe to the service. The higher the projected take rate, the easier it is to attract retail service providers. Once the ISPs are onboard and the feasibility study is completed (next April, Morris says), UTOPIA can take its bonds to bond purchasers to fund the project.

Zipping along

Grant County in Washington is building a Utopia of its own. Unlike UTOPIA, which plans to sell bonds for funding, its fiber project, run by the local public utility district (PUD), is self-funded by two hydroelectric dams on the Columbia River. Grant County PUD (GCPUD) sells the power it doesn't need on the open market. The utility also uses a wholesale model and boasts 15 participating ISPs.

Two years ago, Grant County turned to fiber out of frustration. The telecom incumbents sorely underserved its residents. Cable TV providers offered only 32 analog channels and only to the largest towns. The county had no DSL or cable service, and some rural areas even lacked phone service — unless residents were willing to pay the \$20,000 to \$50,000 line extension charge. So just like Grant County residents did in the mid-1930s when they started their own electric power company, they asked the county to provide advanced communications services, which became the Zipp Network.

GCPUD is investing \$20 million per year (one-third of its annual operating budget) in the six-year project. A year and a half into the project, the Zipp Network is enjoying better-than-expected take rates. "By now, we only expected a 15% take rate, but we've got 41% at the outset," says Jonathan Moore, senior telecommunications engineer at GCPUD. Moore says he expects the take rate to increase to as much as 60% by the project's completion.

"That's great news because it means our payback of 20 years will be more like 12 to 15," Moore adds. So far, 96% of customers are signing up for Internet, 35% are taking Internet and video, with just 5% opting for voice. Even though residents without phone service rely on cell phones, Moore says GCPUD is trying to raise voice adoption rates by making it a health and safety issue. "If your house is burning, you have to take the cell, jump in the car, then drive far enough away to get service to call the fire department." ■

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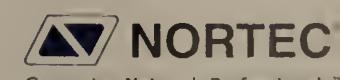
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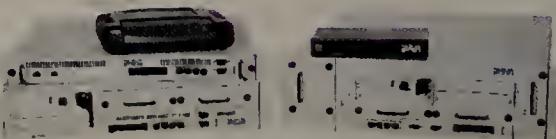


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Calendaring standards gain popularity

■ BY CAROLYN DUFFY MARSAN

Matt Henry, a technical architect for the advanced technology team at Kemet, a Greenville, S.C., electronic component manufacturer, recently received a meeting

invitation from a vendor via e-mail. To Henry's surprise, when he accepted the meeting it was entered automatically into his online calendar, which is stored on the latest version of Lotus Notes.

"The invitation looked like it came from within Kemet," Henry says. "It was really neat and really useful."

Henry's Notes 6.0 software processed the meeting invitation even though it was created using Microsoft Outlook 2002. That's because Notes 6 and Outlook 2002 support an emerging calendaring standard called iCal, which allows the exchange of basic calendaring information across the Internet.

"With Notes 6, we have begun to see the

■ ■ Nobody asks me if I'm free for a meeting anymore. They know that my calendar is available online. ■ ■

Matt Henry
 Technical architect, Kemet

benefit of the full integration of many of the calendaring standards that Outlook uses," Henry says. "Industry standards are starting to be adopted ... and we're starting to see calendaring integration between e-mail systems."

For years, group calendaring was avail-

able primarily through groupware packages from Lotus, Microsoft and Novell. Employees of companies that standardized on groupware could access each other's calendars online, find free times for meeting participants, and schedule

See **Calendaring**, page 30

Short Takes

■ **Nokia and Hewlett-Packard** have joined forces to create a package for remote asset management over wireless links, the companies said last week. The package combines the Nokia M2M Platform, a machine-to-machine communication product, and HP's **OpenView management software** on an HP-UX or HP ProLiant server. The package is targeted at companies that want to integrate management of remote assets into their IT infrastructure. Those assets could include utility meters, vending machines, forestry equipment or cars, HP and Nokia said. HP's salesforce, helped by Nokia experts, will sell the package while HP's services organization will offer related integration and consulting services. The Nokia M2M Platform consists of a gateway and GSM Connectivity Terminals. The gateway establishes the wireless connection and handles IP translation between local and remote applications, while the terminals provide the link over a GSM network. The companies did not say when the product will ship or what it will cost. www.hp.com; www.nokia.com

■ **Symark Software** announced **PowerBroker 3.0**, the updated version of its Unix administrative tool for granting control of account privileges, controlling access to files and directories and logging of requests and keystrokes. PowerBroker 3.0, which costs \$30,000 for a five-machine license, has added support for AIX 5, Solaris 9, Debian Linux and IBM S390 Linux, and now can use digital signatures, certificates and Secure Sockets Layer encryption for security. www.symark.com

The worm that ate the Internet?

■ BY ELLEN MESSMER

Computer-science researchers are predicting that new types of dangerous worms are on their way with the ability to infect Web servers, browsers and other software so quickly that the Internet could be taken down in a matter of minutes.

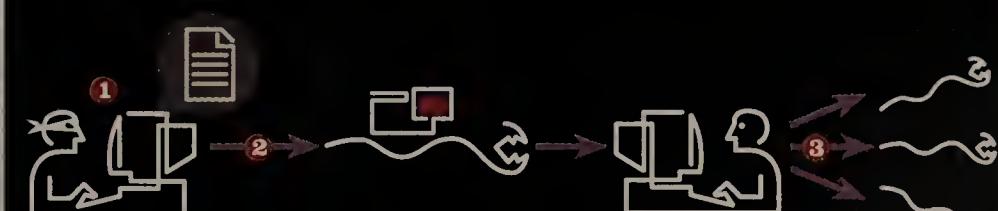
Although still very much a theoretical threat, the killer worms described in the research study "How to Own the Internet in Your Spare Time," are triggering some skepticism — but the idea of them is seldom dismissed as outlandish science fiction.

The authors of the research present a vision of the future where worm-based attacks use hit lists to target vulnerable Internet hosts and equipment, such as routers, rather than scanning aimlessly as the last mammoth worm outbreaks, Nimda and Code Red, did last year. And this new breed of worm will carry dangerous payloads to allow automated denial-of-service and file destruction through remote control.

"Code Red and Nimda could have spread faster, and they didn't have powerful payloads," says Stuart Staniford, president of Silicon Defense and co-author of the research paper detailing the killer worms. The paper was published with two Berkeley, Calif., scientists, Vern Paxson and Nicholas Weaver. Weaver is a graduate student at the University of California at Berkeley, and Paxson is staff scientist at the ICSI Center for Internet Research in Berkeley and Lawrence Berkeley National

Worm with teeth

How the Flash worm would strike the Internet within minutes:



1 The Flash worm's author collects a hit list through stealth scans, DNS searches, Web-crawling spiders, a public survey such as Netcraft or listening for "broadcasts" from other worms that already have infected Internet hosts.

2 The Flash worm, with a dangerous payload to destroy files or launch a denial-of-service attack, is sent out, programmed with a 9 million or so IP address hit list compressed to 7.5-megabyte file sent over a high-speed link.

3 Once the worm infects its first set of targets, it divides into "child worms" with preconfigured chunks of IP targets, which in turn divide again once they've infected their targets.

Laboratory's network research group.

In "How to Own the Internet in Your Spare Time," the three say that this next generation of computer worms — which certainly would have military application during war — will carry knowledge about a specific server's vulnerability and propagate at a breathtakingly high rate of infection, "so that no human-mediated counter-response is possible."

Remedying software vulnerabilities remains a huge problem, with many corporations saying it takes about a day or two — at best — to apply software patches once a software vendor has acknowledged a vulnerability in product coding and supplied a fix for it. And online home computer

users are often wholly unaware of these types of problems.

Staniford says they tested the paper's thesis in a lab simulation of a computer worm designed to subvert 10 million Internet hosts over low-speed and high-speed lines. Supplied with its own hit list of IP addresses and vulnerabilities gained through previous scanning, the theoretical worm could infect more than 9 million servers in about 15 minutes. They called this the Warhol worm after artist Andy Warhol's quote that everyone will be famous for 15 minutes. A similar theoretical worm they coined the Flash worm, blasted out from a 622M bit/sec link,

See **Worm**, page 30

Calendaring

Continued from page 29

meetings and conference rooms. But these capabilities were available only between employees of the same company.

Now a growing number of messaging vendors are beefing up their calendaring capabilities with support for standards such as iCal. With iCal, users of different messaging client and server software can invite each other to meetings via e-mail, and either accept or decline those invitations.

"A lot of organizations are looking for calendaring, but they want it to perform the functionality that it can do with Exchange and Notes," says Mike Osterman, president of Osterman Research, which tracks corporate use of groupware. "[In the past] a lack of calendaring functionality held some messaging products back."

During October, three messaging vendors announced software that supports iCal:

- Lotus improved the calendaring capabilities of Version 6.0 of Notes and Domino. The upgraded groupware packages support iCal and offer improved calendar interoperability between Notes users in different companies.

- Mirapoint added calendaring to its messaging appliances with the release of Messaging Continuum, software that supports personal and group calendaring and resource scheduling. Messaging Continuum supports iCal and the older vCal standard.

- Stalker Software added calendaring and scheduling to its CommuniGate Pro Messaging Server 4.0. Stalker expanded its support for Outlook's calendaring features and announced plans to comply with iCal

Worm

continued from page 29

would take even less time to "own" the Internet.

Just as the U.S. government has established the Centers for Disease Control to be the central voice in matters related to national health risks, it would benefit the country to set up an operations center on virus- and worm-based threats to cybersecurity, the authors say.

Richard Clarke, the adviser to President Bush on cybersecurity matters, recently said that while he hadn't read the Flash worm research paper, he wouldn't discount the idea of a very-fast-moving worm of this type.

As it happens, the draft "National Strategy to Secure Cyberspace" report issued this month contained the recommendation that the government fund a network operations center as a central point for threat analysis. ■

Calendaring standards explained

vCalendar — A standard that dates back to 1996, vCal is a basic electronic calendaring and scheduling exchange format. It was developed by the Versit Consortium, whose key members included Apple, AT&T, IBM and Siemens. VCal traditionally has been used in handheld devices and mobile phones.

iCalendar — iCal outlines a common format for the exchange of calendaring and scheduling information across the Internet. A product of the Internet Engineering Task Force, iCal was published as a standards track document in 1998. The IETF also published two companion protocols in 1998: iTIP, which specifies how calendaring systems use iCal objects to interoperate with other calendaring systems; and iMIP, which specifies a binding between iTIP and Internet e-mail transports. The iCal protocols offer basic calendaring interoperability such as sending, receiving and responding to meeting invites among users of different calendaring software. iCal has gained support across the messaging industry since it became available in Outlook 2002, which shipped last summer.

Calendar Access Protocol — A companion to iCal, CAP is the key missing link in calendaring interoperability across the Internet. The IETF has worked on CAP for several years, but has not yet finalized it. CAP lets a calendar user use a calendar user agent to access an iCAL-based calendar store. CAP offers advanced calendaring support, including the ability to query, create, modify and delete iCal events, and it specifies how to search for available free time. Authors of the CAP drafts include engineers from AOL/Netscape and Steltor.

SyncML — An XML protocol that was released in 2000, SyncML supports universal synchronization of data between devices, particularly wireless devices. Supporters of the SyncML Initiative are Ericsson, IBM, Lotus, Matsushita, Motorola, Nokia, OpenWave, Starfish Software and Symbian. The first compliant products began shipping in 2001.

and vCal later this year.

These messaging vendors join Ipswich, Novell and Sun, which already support iCal and other calendaring standards in their enterprise-class messaging and calendaring software products. (See graphic, above.)

Robert Mahowald, research manager for collaborative computing at IDC, says that after e-mail, the most popular feature in groupware packages is calendaring and scheduling. That's why it's a natural add-on for other messaging vendors, he says.

"For a company that needs to have an integrated collaborative environment with customer application development, e-mail, and calendaring and scheduling are the two most important applications," Mahowald says. "Companies that are used to that are not going to take it away."

Between the two key calendaring standards, Mahowald says that "iCal is more of a desktop collaboration standard while vCal is more for mobile applications."

Calendaring is one of the most popular applications at Kemet, which has 3,000 employees worldwide who use Lotus Notes, Domino and Sametime instant-messaging software. Henry estimates that half these employees regularly use the calendaring features.

"Nobody asks me if I'm free for a meeting anymore," Henry says. "They know that my calendar is available online, and they check my free and busy time through Notes. We schedule everything through Notes — conference rooms, projectors, even cars. It's all done through the calendaring features."

Kemet recently upgraded most of its servers to Domino 6, and it has about 40 end users testing Notes 6. The rest of the employees use a mix of Notes 4.5 and 5.0.

but none of the advanced calendaring features such as looking up a co-worker's free and busy time.

"iCal provides the barest form of interoperability," says Alan Lepofsky, offerings manager in the Lotus messaging solutions group. "iCal doesn't support all the workflow applications in Domino, like counterproposing a meeting time or delegating a meeting."

Two new calendaring standards — Calendar Access Protocol (CAP) and SyncML — might provide the additional features users want. CAP is a server-side standard still under development that will complement iCal and offer such features as searching other people's free and busy time. SyncML supports calendar synchronization between desktop and wireless devices.

Sun says it will support CAP and SyncML as soon as those standards are ready.

"Enterprises would like to see calendaring standards widely deployed," says Manish Punjabi, product line manager for communications products at Sun.

"Most Fortune 500 companies do some amount of mergers and acquisitions," Punjabi says. "When they acquire a company, they can't require that company to have the same e-mail and calendaring. They want to have any client on the front end, but have standards-based servers on the back end."

"The whole world is waiting for CAP," says Lynn Madsen, product manager for Novell's NetMail, which is iCal-compliant Web-based messaging software used by Southwest Airlines and the University of Kentucky. "CAP will allow you to replace the proprietary groupware functionality that corporate customers want."

Until CAP and SyncML are widely deployed, network managers say their biggest issue in calendaring integration is to ensure the interoperability between Outlook and other messaging software. That's why many messaging vendors, including Stalker and Ipswich, are tweaking their products in other ways to provide better integration with Outlook. ■



More online!

Look online for a chart that shows which vendors' packages support new calendaring standards.

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'NET
INSIDERScott
Bradner

Does it hurt to be castigated?

You can tell that Steve Ballmer is a Harvard boy. When Microsoft's CEO was asked about one of the company's public relations firms getting further ahead of the truth than what goes for normal at Microsoft, he replied: "If that's right, I

will certainly castigate the offender." Naturally, a better class of language than you would expect from non-Ivy League schools like the trade school a few miles down the Charles River. We train 'em good here at Harvard.

The incident that caused Steve to get so worked up was one of the dumber things done by the public relations side of a major U.S. corporation in years. The last case like this that I can remember was AT&T issuing a press release announcing that the one-time biggest company in the world — whose stock was considered safe enough for "widows and orphans" (some of you readers might not remember those utopian days) — was adding the "Hot Channel" to its cable TV companies' lineups, thus proving two things: that pornography is still a technology driver; and that PR departments can be stunningly naive.

For those of you who have turned off the TV until after the elections to avoid the stomach-turning political ads (almost makes one lose one's faith in democracy), Apple Computer has been running ads in which people talk about switching from Windows machines to Macs. The speakers in these ads look like real people and use what seem to be real names. In this case, Microsoft put up its own "switching" Web page.

Called "Confessions of a Mac to PC convert," the page purported to be from someone who switched to Windows XP after owning Macs for eight years, and was thrilled with her new life. And the switch was easy: "I was up and running in less than one day, Girl Scouts honor." Maybe the Girl Scouts should join the parade of people suing Microsoft, because there was no honor in this switcher.

The story did not ring true, so it did not take long for folks to start poking around and find the name of a public relations firm embedded in Word documents that accompanied the ad. Another example of Microsoft's refusal to seriously evaluate the privacy aspects of its products — neat that one of the problems bit the company this time. It turned out that the whole thing was written by the public relations firm that works for Microsoft, and the lovely picture of a young woman looking somewhere between meek and plaintive turned out to be a stock photo from Getty Images.

Considering the state of Apple's sales, it should not have been hard to find a real Mac-to-PC switcher, so the whole episode gives the term amateurish a whole new context. I hope Steve's castigation message is "speak the truth" and not "don't get caught." Time will tell.

Disclaimer: I could not find a Harvard class on castigation, so Steve must have done some postgraduate study. Anyway, the above observation is mine alone.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached at sob@sobco.com.

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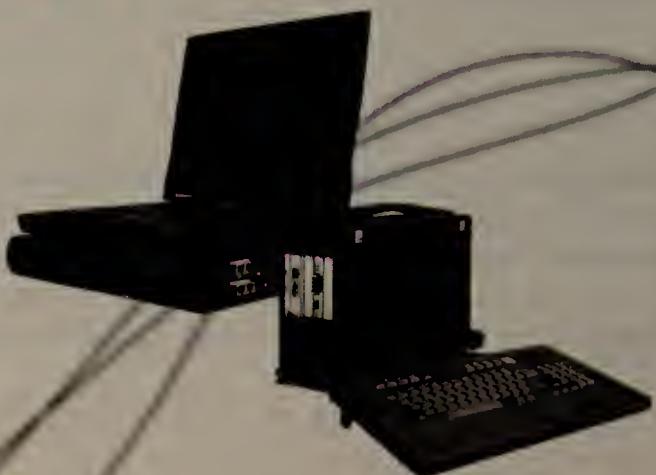
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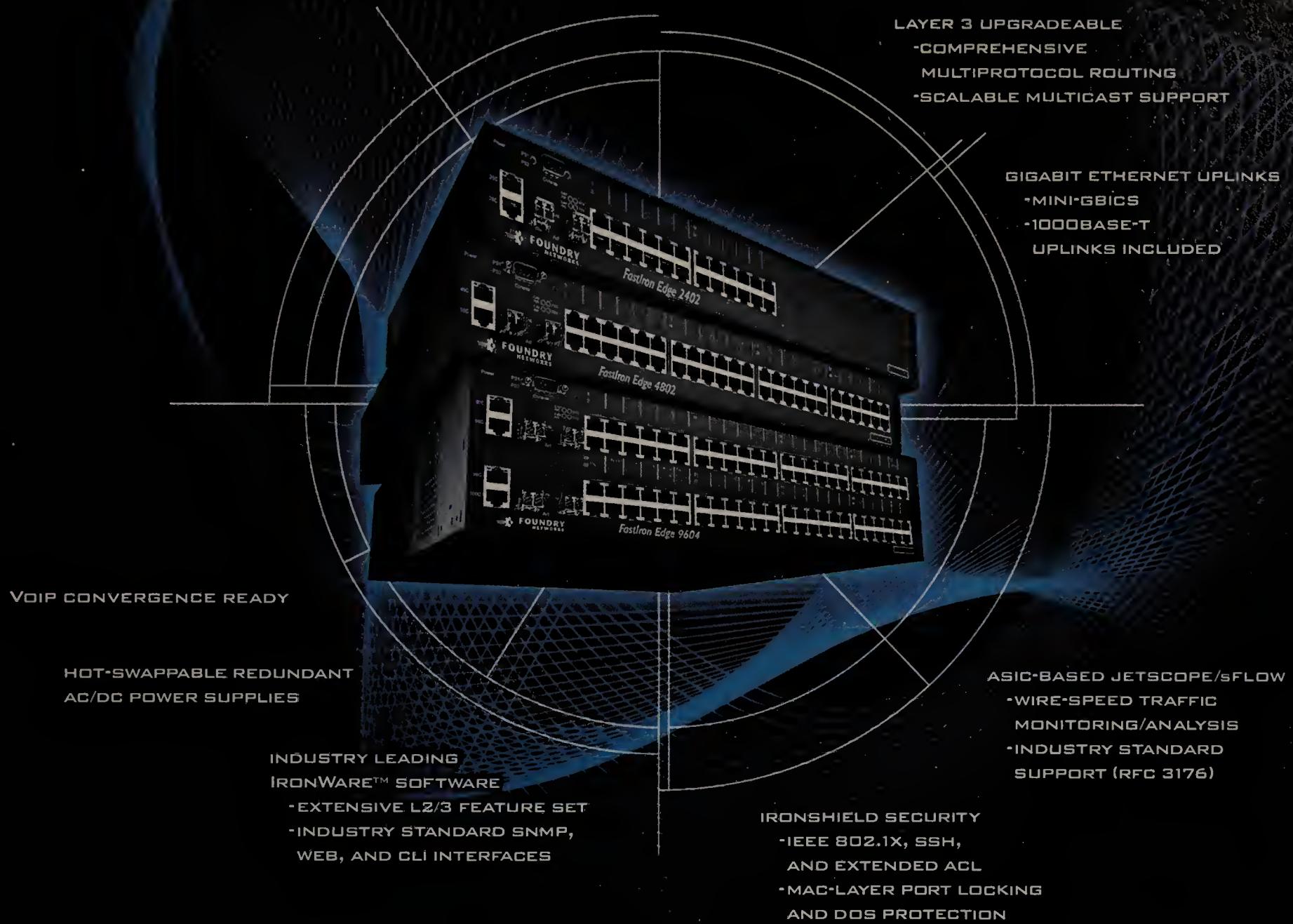
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Columnist Dave Kearns recently weighed in on Apple's ads. Read his column and reader reaction. **DocFinder: 2831**



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SECURITY: Keeping wireless LANs safe.

Wireless LAN attacks grow in sophistication

BY JOHN COX

It was a chilling moment: Jim Bowen, a security expert with Internet Security Systems of Atlanta, had tracked down an unidentified radio signal outside the building of a client.

Someone had set up an 802.11b access point near enough to be able to receive communications from wireless clients inside the building. Posing as an official access point on the corporate wireless LAN, this decoy could accept traffic that revealed key data, network names and media access control (MAC) addresses. In other words, a wealth of corporate information that, if passed onto a wireless laptop and a set of freeware tools, could let an outsider access resources on the wired LAN.

"This shows an increased level of sophistication in wireless threats," says Patrick Wheeler, an ISS product manager, who oversees software called Wireless Scanner, which can detect such decoys. "You have to work hard to set up something like this that close to the corporate environment."

During the past year, wireless LAN security threats have multiplied, according to users, vendors and consultants. There are more attack applications available, the applications are more sophisticated and highly automated and the weaknesses of various wireless hardware and software products are documented more extensively and precisely.

Attackers are continually updating freeware utilities and other programs for such things as automatically unscrambling the Wired Equivalent Privacy (WEP) encryption keys, which form the basic, although flawed, 802.11b security layer. These programs include WEPcrack and Airsnort. Other programs, such as kismet, pick up an access point's Service Set Identifier, which acts like a kind of password for clients to join the wireless LAN.

"It's definitely getting to the point where we need to move to [a VPN] for our wireless LAN," says Dennis Moul, director of IS for CoManage, a Wexford, Pa., carrier software vendor. A VPN would require each wireless user to authenticate, for example, via a Remote Authentication Dial-In User Service server, and then would encrypt or scramble the data moved between the wireless devices and the access point.

But even a VPN can be exploited in the wireless world. The decoy mentioned earlier is a variant of the so-called "man in the middle" attack, which lets an intruder glean network information about access points or client adapters, such as MAC addresses, and use this to impersonate already authenticated wireless LAN devices. One university network manager at a southeastern university recently invited an intrusion-detection vendor to demonstrate its product on campus. Within minutes, the manager witnessed two attempts at identity theft — using someone

else's authenticated identity.

During the past year there has been an upsurge in Web sites, such as www.wigle.net (for Wireless Geographic Logging Engine), where anyone can upload readings from wireless detection programs such as NetStumbler, along with coordinates from a satellite-based geographic positioning system.

"You can find the exact longitude and latitude of an access point," says Fred Tanzella, chief security officer for AirDefense, which makes handheld software for detecting and finding wireless intrusions. "You can then map directions to the site through MapQuest and even get an aerial photo of the location."

Such sites have made last year's phenomenon of "war

them up again after the sweep is over," he says.

Hacking is in large part a repetitive, trial-and-error process. Like all such processes, it lends itself well to software automation.

"What I have seen [in the past year] is how automated and easy it is for even low-level attacks to be carried out," says Al Lang, COO for Fidelis Security, a vendor of intrusion-detection systems based on a modified version of the open source program Snort. The software scans network packets, searching for patterns, which it compares with a database to detect surreptitious attacks. "Hackers automate their attacks on a range of TCP/IP addresses," Lang says. "You can find thousands and thousands of such attempts in the space of a week."

Hackers can find Web sites that have file after file of sample attacks. "These can be downloaded, automated, and they just sit there [on the attacker's computer] and run and run and run," Lang says. "There are a lot of people who've automated the process of continually attacking [the network]."

Countermeasures

In wireless LANs, as in wired networks, security is a multilayered task. Increased wireless LAN use and the growing skill of attackers underline the

urgency of developing countermeasures.

Some of these countermeasures can be found in new software and hardware tools. These include security servers such as those offered by Bluesocket, Cranite and Vernier. Intrusion-detection software from companies such as AirDefense and Fidelis, which is doing initial testing of its pattern-matching software with select customers, are the latest new thing.

But many countermeasures are basic, proven network security architectures, policies and procedures that need to be fine-tuned for wireless networks. This work starts by knowing that the assumption that no one can physically access my network doesn't apply when the network medium is a radio wave.

CancerCare of Manitoba, which does cancer screening and treatment for the entire province, is installing Cranite Systems' security controllers to protect wireless LANs at three main sites in Winnipeg and at 17 other rural sites. At the same time, network administrators constantly monitor the firewall and wireless LANs for any attacks, and regularly run internal security audits, says Mark Kuchnicki, CancerCare's director of IS.

CoManage's Moul continually evaluates the wireless risk to his company's data. He weighs not only the expertise level of potential attackers, but also what could be called the information status of CoManage. "What is the perceived risk to this company at this time?" he asks. "Right now, we're not a publicly traded company. If we were, or were a household name, that risk would be different." ■

Wireless threats

Attacks against wireless LANs are evolving: They are becoming more automated, more sophisticated and target more weak points. Here are a few:

Threat	What it does	Countermeasures
Decoy access points	Wireless LAN clients assume the decoy is a valid access point and connect.	Mutual authentication.
Access point maps	Web sites record precise location of any unsecure access points and directions to it.	Security architecture; smart deployment; authentication; encryption.
Invisible access points	Radios embedded in shipping, receiving and other systems create open back door.	Security policies; intrusion detection.
Automated low-level attacks on WEP keys, passwords, addresses	Programs run repeatedly to ferret out and crack an array of weaknesses.	Intrusion detection; security architecture; access point configuration management.

driving" — cruising around in a car with a laptop fitted with a wireless adapter card and sensitive, or high-gain, antenna to find unprotected corporate access points — already passé.

"The real hackers today don't even have to do any driving," he says.

War spamming

Another recently developed threat is war spamming. Spammers use the same tools and lists to enter a corporate network through an unsecured access point, then hack to the corporate e-mail or Simple Mail Transfer Protocol server. Once there, they use the corporate facilities to send out a blizzard of e-mails promoting services, political beliefs or general chaos. "For the company that's hacked, their ISP may suddenly block their site to shut down the spammer," Wheeler says. "And it's often hard to get unblocked. That means no one can get to your corporate e-mail [from outside]."

Sometimes the the growing sophistication of your own employees creates the problem, according to Jay Chaudhry, CEO of AirDefense. Chaudhry recently met with a large systems integrator where network executives, concerned about wireless security, had banned wireless LANs. To enforce the ban, IT staff routinely made the rounds of the site with NetStumbler loaded on wireless laptops, searching for any "rogue" access points. They didn't find any.

Chaudhry found out why. "Whenever the 'IP police' go around with NetStumbler, the users simply unplug their access points, hide them in a drawer or cupboard, and set

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Service Providers

■ THE INTERNET ■ EXTRANETS ■ INTEREXCHANGE AND LOCAL CARRIERS
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10 A Verizon president sets sights on AT&T



Verizon is on the verge of winning long-distance approval in all 15 of its local states, giving the carrier another arrow in its quiver of enterprise services, which already include local voice, many flavors of data transport and network management, design and integration services. Network World Senior Writer Michael Martin recently sat down with Eduardo Menasce, president of Verizon Enterprise Solutions Group, to discuss the evolution of the telecom market.

PHOTOS: JOSEPH VERRICKS

You're nearing 271-approval in all your local states. Initially this seems to be more of a consumer play, but what does it mean long term for the enterprise?

It means we can become not an [interexchange carrier], but a totally different entity: One that can leverage extraordinary local capabilities and go after [long-distance] revenue that we couldn't pursue in the past. We're nationwide, but we only have a local presence. We're outstanding in New Jersey, outstanding in New York. However, we can't serve a customer from here to there. 271-relief lets us cross that river. I'd like to share some news with you, but I can't because it's something we're doing in a couple of weeks. I can say customers are asking us to give them long-distance — voice and data. They're asking us to make the transition from a [regional Bell operating company] — not to an IXC — but to something different.

And Verizon is very well positioned to do that. Looking at what is happening in

the marketplace, there is a window of opportunity. When we formed our objectives two years ago, I didn't think the market would go in the direction it has. I didn't expect the economic downturn, everyone cutting spending, and we didn't forecast we would have fewer competitors. We couldn't foresee the demise of WorldCom. So we will become a real solutions provider, A-to-Z.

AT&T and WorldCom are some of the largest competitive local exchange carriers today. How do you see them as competitors?

AT&T is clearly No. 1 in the large-business customer segment. They have a good reputation and national presence. They are the strongest IXC. We're going after each other. But it's much easier [for us] to go after long-distance. It's less capital-intensive to move from local to long-distance than the other way around. WorldCom is a question mark. What will happen to them, I don't know. I would guess they will [emerge from bankruptcy] a completely different company — a smaller company and maybe not the competitor they were before. That would leave us two strong competitors: AT&T and Sprint.

When you're going after the large-customer segment, how do you convince someone to shift from AT&T? Is it price?

People are maybe more price-sensitive today because they have to do more with less. But they also realize that price is not the only game in town. A lot of people got hurt by going for price. People are looking for someone who can provide the entire value proposition — strong company, facilities-based, large portfolio of products and services.

See Verizon, page 38

Short Takes

Infonet announced last week a partnership with **Polycom** to offer video-over-IP services for its global business customers. Infonet is packaging Polycom interactive video products with its dedicated IP services. Infonet is bundling the Polycom Office products, which include Polycom's ViewStation, iPower, ViaVideo endpoints, MCG Video Multipoint Control Unit and MCG Gateway. Infonet expects to ease adoption and deployment of video-over-IP by offering a service that includes all the video equipment needed.

AT&T Wireless announced last week its plans to make available Web-enabled **Smartphones running software from Microsoft** in the U.S. in the first half of next year. Similar phones go on sale in Europe this month.

NTT/Verio rolls out CDN service

Offering features peering points in U.S., London and Tokyo.

■ BY JENNIFER MEARS

ENGLEWOOD, COLO. — NTT/Verio has expanded its IP services by adding a content delivery feature for customers who want to speed Web content to end users around the globe.

The service, called Smart Content Delivery, was launched earlier this month. NTT/Verio is using caching and switching devices, as well as caching software, from Foundry Networks and Network Appliance to deliver the service. It employs reverse-proxy caching and global load balancing to move content to the edge of the NTT network and then deliver it from the server closest to the end user.

The edge caching servers are in four peering points: San Jose; Sterling, Va.; London; and Tokyo. Wayne Lambert, director of product engineering at Verio, says the company is planning to expand the service by adding caching servers in more locations.

The service can handle static content

Taking it to the edge

NTT/Verio's Smart Content Delivery service speeds the delivery of content on its global IP backbone. The service:

- Uses reverse-proxy caching to off-load static content and streaming media from origin servers.
- Uses caching servers at the edge of the network for faster delivery.
- Incorporates global server load balancing to direct end-user requests to the optimal edge server, depending on content requested and location.
- Handles static content and streaming media, including Windows Media, RealOne Player and QuickTime.

and streaming media, although Secure Sockets Layer transactions and dynamic content still must be processed at origin servers. Nevertheless, Verio says that tests conducted by Keynote Systems have

shown Web sites perform two to eight times faster because of the ability to off-load some of the content from origin servers, pushing it to the edge of the network.

Daniel Marion, head of technology at UEFA Media in Nyon, Switzerland, says the soccer organization's Web site has seen download times cut in half and has reduced the strain on its origin servers — even as traffic has doubled since last year — since it began beta-testing the NTT/Verio Smart Content Delivery service earlier this year.

Verio hosts the UEFA Web site, which averages between 1.5 million to 2 million page views per day but spikes to 6 million page views on game days. Marion says UEFA considered content delivery network (CDN) providers such as Akamai Technologies, Digital Island and Mirror Image before settling on NTT/Verio's new service. The primary reason, he says, is that the Web site provides real-time, play-by-play text and graphics, and NTT/Verio could guarantee

See CDN, page 38

EYE ON THE CARRIERS

Johna Till Johnson



In a recent column I wrote that the incumbent local exchange carriers' anger over unbundled network element-platform pricing was misplaced. I've gotten a lot of feedback, and I appreciate the time, energy and thoughtfulness that people put into their responses.

Most of the notes were some variant of "right on," although a handful of them were passionate rebuttals. Judging from their e-mail addresses, the authors were predominantly ILEC employees — no surprise — but not from the marketing or public relations departments. These were real telecom engineers writing about their

More on why the ILECs are crying wolf

real-world experiences, and they highlighted some areas that could use further clarification.

Here's a summary of the main issues they raised and my responses.

1) Competitive local exchange carriers (CLECs) pay artificially low rates to use networks they don't have to pay to manage or maintain. This lets them reap the profits without making the necessary investments.

Uh, what profits? Have you noticed how many CLECs have gone broke in the past 24 months? If this argument held water, the ILECs would be falling all over themselves to take advantage of the rules and resell each other's networks. Why isn't Verizon selling services on SBC Communications' network and vice versa?

The truth is that nobody's making a killing in this market. And that's not because UNE-P is unfair. It's because the market value of residential services continues

to drop. That puts a huge amount of pressure on the providers of these services to survive with lower margins, reduce operating costs or both — which brings us to the second point.

2) Necessary investments include big iron switches, engineers with hard hats and tool belts, vans and the like. Wrote one reader: "You need to actually have a network to invest in it and make it more efficient." Another said: "How many hard hats and tool belts did [the CLECs] buy this year?"

Well folks, this is the crux of the matter. Regular readers will note that I try hard to distinguish between service providers and bandwidth providers. "Bandwidth" is a low-value commodity these days — and that includes residential dial-tone.

Anyone who wants to be in the bandwidth business needs to figure out how to reduce operating costs — and that means using technology effectively to reduce (not

increase) the number of big iron switches, vans and tool belts they purchase.

What that means in human terms is lost jobs. And here's a heartbreaker: The people at greatest risk are the good guys, the ILEC employees who resisted the "get-rich-quick" mindset of the '90s, stayed on the job, and took care of their families and customers.

Yes, what's happening in the telecom industry is painful. And the pain's not over yet. But don't blame UNE-P. Blame senior management at the ILECs for not realizing where the market was headed and for wasting their dollars on lobbyists and lawyers instead of making the necessary investment to upgrade from bandwidth to service providers.

Johnson is president and chief research officer at Nemertes Research, a technology research firm. She can be reached at johna@nemertes.com.

CDN

continued from page 37

that fresher content would be delivered from edge servers.

"As we host in an NTT/Verio data center and we're traveling on the NTT backbone, we can guarantee that content is updated more or less in real time. We never experience problems by having content replicated and having a delay on the server locations they have. . . . We were able to guarantee that our live content is the same in every location they have their CDN deployed," he says.

Because the other providers used overlay networks within multiple ISPs, they couldn't guarantee the quality of service UEFA needed, Marion says.

Still, NTT/Verio might be at a disadvantage when trying to sell the service to new customers looking for the broader reach an Akamai CDN can offer with nearly 13,000 edge servers in hundreds of ISPs, analysts say.

"The way [NTT/Verio is] positioning this is as a value-add to their existing hosting customers and a value-added extra to induce some of their access customers to use them for hosting," says Melanie Posey, program manager of Web hosting at IDC. "It's not really a stand-alone product."

NTT/Verio, along with competitors such as AT&T, are approaching the content delivery issue from a different direction than multibackbone providers such as Akamai and Speedera, analysts say. The network service providers contend that by leveraging their existing backbone and peering relationships they can provide comparable services at lower prices.

Analysts see growth in both approaches, and IDC predicts the CDN services market will grow from \$288.1 million in 2001 to more than \$2 billion in 2006.

NTT/Verio's Smart Content Delivery service is available now. Pricing starts at about \$1,500 per month. ■

Q A

Verizon

continued from page 37

And customers would like to have a choice. They'd like to have another provider that could be as strong or stronger than AT&T, so they aren't in the hands of one provider.

The other RBOCs don't have the same reach as you do since your acquisition of GTE. How will they shape up as competitors?

They will be competitors. It will depend on their geographical reach. We've already started to move outside of our franchise. We added to existing GTE networks in Dallas, Seattle and Los Angeles in a near out-of-franchise strategy. We deployed facilities there to compete with the local players. The expansions were close to existing distribution points. For example, in Dallas we were on the outside of Dallas, but not in the big business district. We added facilities in the business areas. Essentially we're trying to follow the customer. The same customer who has an office in New York might have one in Dallas, L.A. or Seattle. And eventually we can attract new customers there, too.

We also have a presence on the international side. We deployed a network that follows our customers outside of the U.S. We can do business between the U.S. and Europe, Canada, Latin America, Asia.

How do you deal with out-of-franchise markets? Do you see yourselves moving into Chicago, for example?

We are a player in Chicago already. We don't have facilities there. But [we have] our network-integration business, whether it's installing [customer premises equipment] or maintaining and managing networks. We manage networks for our customers on a nationwide basis. So in Chicago, we could design the network, provide the boxes, install and maintain the network.

Would you manage the transport as well?

Yes, we do that. We could manage the customer's frame relay network, even if it's not



Verizon frame relay. We monitor that out of our network operations center.

What types of new services are coming?

You have frame relay, transparent LAN services that are important. Regional dedicated optical. The whole area of managed network services is taking off very fast. IP Centrex, IP VPN, dense wavelength division multiplexing. And voice over IP, which is slowly getting there.

Wireless LANs are coming along. It's still not ready for prime time in the enterprise because of security issues, but we're getting

there and we're starting to resell some of the boxes. What we really want to do is provide a managed network service, where we manage the wireless LAN.

Is frame relay still the data service of choice?

It is still a very strong product. We thought at some point it was going to slow down, but it is still selling very well.

Is it still smaller than private lines?

Yes. There's a big legacy of private lines. But private lines are only growing at 1% to 2% annually. Frame relay is growing 18% to 20% a year.

Do cable TV providers compete at all for enterprise customers?

I don't want to minimize the possibilities here. But I don't see that the cable companies by themselves are going to become enterprise players. They don't have the networks. They don't have the reputation. They don't have the knowledge and they don't have the expertise. It's too much of a leap.



More online!

Verizon might be gunning for long-distance gains, but it's also trying for strides in other areas, such as convergence.

DocFinder: 2838

Unbundled network element pricing — the requirement that RBOCs must resell network resources to competitive carriers — looks like it might be changing. What needs to change?

I don't know exactly what the ideal situation would be. I do know what we have today is not ideal. The way things are designed today, it allows people to use our network at prices that are below our costs. I don't think that makes any sense. ■



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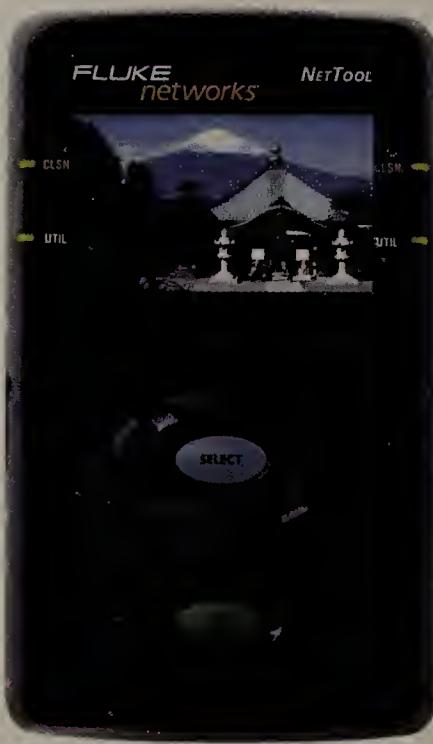

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The Edge

■ SERVICE PROVIDER DEVELOPMENTS
AT THE JUNCTURE BETWEEN THE ENTERPRISE
AND THE NEW PUBLIC NETWORK

Takes

■ SONET switch start-up **Akara** and facilities-based carrier **LightWave Communications** last week announced the launch of LightWave's storage-over-SONET managed service offering, which uses Akara's OUSP SONET multiplexer. The companies also announced that Web hosting provider Digex is deploying LightWave's new service.

LightWave is providing Digex with a managed service offering that maps native Gigabit Ethernet onto LightWave's SONET ring and transports the data between data centers in Virginia and Maryland using OUSP.

Akara's OUSP adapts Gigabit Ethernet traffic originating from Digex-owned routers onto a SONET OC-12 interface for transport through LightWave's network.

LightWave provides metropolitan optical access services that interconnect carrier hotels, data centers and Verizon central offices within the Washington, D.C., to New York corridor. www.akara.com; www.lightwavecom.com

■ **Native Networks**, a vendor of metropolitan Ethernet systems for optical access networks, last week announced the appointment of **Rami Hadar** as CEO. Hadar was co-founder and executive vice president of marketing and business development of Ensemble Communications, a wireless broadband access company.

Before founding Ensemble, he was the co-founder and CEO of CTP Systems in Israel. In 1995, CTP was acquired by DSP Communication, which was eventually acquired by Intel. Native's products, designed for deployment in first-mile metropolitan-access infrastructure, transport and aggregate metropolitan Ethernet packets alongside legacy circuits/TDM services over dark fiber, SONET/SDH infrastructure or dense wave division multiplexing. www.nativennetworks.com



A

Redback CEO views industry downturn as opportunity

The impact of the telecom downturn on the larger players is well-chronicled. But even though affected similarly, some smaller players are viewing the slump as an opportunity to strut their stuff. Redback Networks President and CEO Kevin DeNuccio recently shared his perspective with Jim Duffy, managing editor of Network World's The Edge.

What are your chief differentiators from Cisco and Juniper?

If you look at [subscriber management systems (SMS)] and what Redback built, it built an operating system for the first time with user-to-network in mind, not network-to-network. If you look at [Cisco's] IOS and the way it was architected, it was designed for the enterprise, a multiprotocol router. It was the only IP operating system, so it moved in and became the Internet as well. Juniper [entered the market] by building a core operating system. They [entered the market] at the high end when Cisco couldn't scale up.

SMS beats Cisco everywhere around the world. How does little Redback beat Cisco in the routing space unless it truly had a technology advantage? I ran sales at Cisco for seven years. We couldn't beat Redback in aggregation. Here I am. I think the DSL model is how you're going to manage data networks.

The foundation architecture that sits there [in SMS] is so dramatically different from what anybody else has, it can't be replicated for years. IOS and JUNOS think about IP connectivity; they don't think about services and users.

What about (Unisphere's) Unison?

The underlying Unisphere operating system is modified from industry-standard code that's off-the-shelf. They basically took off-the-shelf software and laid SMS on top of it. They can get 8,000 users on a box, which is better than Cisco, and rivals our low-end system. They built a pretty good platform and, in my opinion, became our only viable competitor. Cisco, because of their size and presence, is in the bids all the time. But they are not a viable competitor.

I'm glad about the Juniper acquisition of Unisphere because I'd rather have two competitors than three of us or four, because it does confuse the issue. I think the challenge for Juniper is they view their strength as the percentage they were able to gain in the core, and they wanted to take JUNOS and move it to edge. They've been fairly unsuccessful at

that, selling baby core routers at the edge. It's unclear to me how they are going to sort through their operating system and SMS stuff. But they're going to be deficient to what I think our capabilities are. We have something. The customers realize it and that's why we're able to win. As a small company against these guys, people want an alternative to the [Cisco 7500 router] and they want an alternative to Cisco. I think we have it.

You have fewer competitors but they're big and varied.

At some level, technology becomes a driver. When you talk about orders of magnitude difference, when you talk about a box that can do 2,000 VPNs vs. 200.... Our strategy is first to be viewed as one of three choices the customer has in the IP world. The next step under that is to convince the world that we're the alternative on the edge, just the way Juniper became the alternative in the core. There's that much differentiation in it that Cisco just can't bowl over us and just sink us on a given deal like I used to do day in and day out.

The other aspect that we have that's to our advantage is we have the top 300 companies around the world. We have 17 of the top 20 DSL networks, we have every [regional Bell operating company], we have every [interexchange carrier]. We're not a foreign entity to these guys. Verizon has 900 routers of ours in their network today. That's twice what they have of Cisco. Despite Juniper's size, we have a better customer base than they do. They're not in the [post, telegraph and telephone administrations] and RBOCs. They're in the ISPs and the IXCs. Those are not the customers that are surviving this wave of destabilization.

Are you targeting multicable service operators aggressively given the impending collision between RBOCs and MSOs?

We are just beginning to [target MSOs]. In countries where cable companies run like the RBOCs do — they offer broadband as a wholesale service to ISPs or to content providers — there's an SMS model usually in place. We play in that kind of space around the world. In the U.S., they have not been doing that today. But they're just coming around. We have some significant opportunities that we're working.

Is Redback looking to get into the cable modem termination systems business?

I've been paring down what we do given that we need to get more focused. We're focused now and have significant differentiation. You mentioned optical transport. We've really backed down on our investment there, significantly. We haven't discontinued the product line but we got a very small R&D team so we really downsized the R&D team. Strategically, we're taking care of our customers and we're doing the features that our customers are demanding us to do. We will migrate a lot of those networks to routing. ■



More online!

Get the background on
CEO Kevin DeNuccio's strategy to pin
Redback's comeback hopes on the router.

DocFinder: 2836



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Technology Update

■ AN INSIDE LOOK AT THE TECHNOLOGIES AND STANDARDS SHAPING YOUR NETWORK

Network taps enable passive monitoring

■ BY AMY FISHER

Network taps are used to create permanent access ports for passive monitoring. A tap, or test access port, can be set up between any two network devices, such as switches, routers and firewalls.

It can function as an access port for any monitoring device used to collect in-line data, including intrusion detection, protocol analysis, denial of service and remote monitoring tools.

A monitoring device connected to a tap receives the same traffic as it would if it were located directly on the wire.

The tap can send traffic data to the monitoring device by splitting or regenerating the network signal. Neither splitting nor regeneration introduce delay or change the content or structure of information packets.

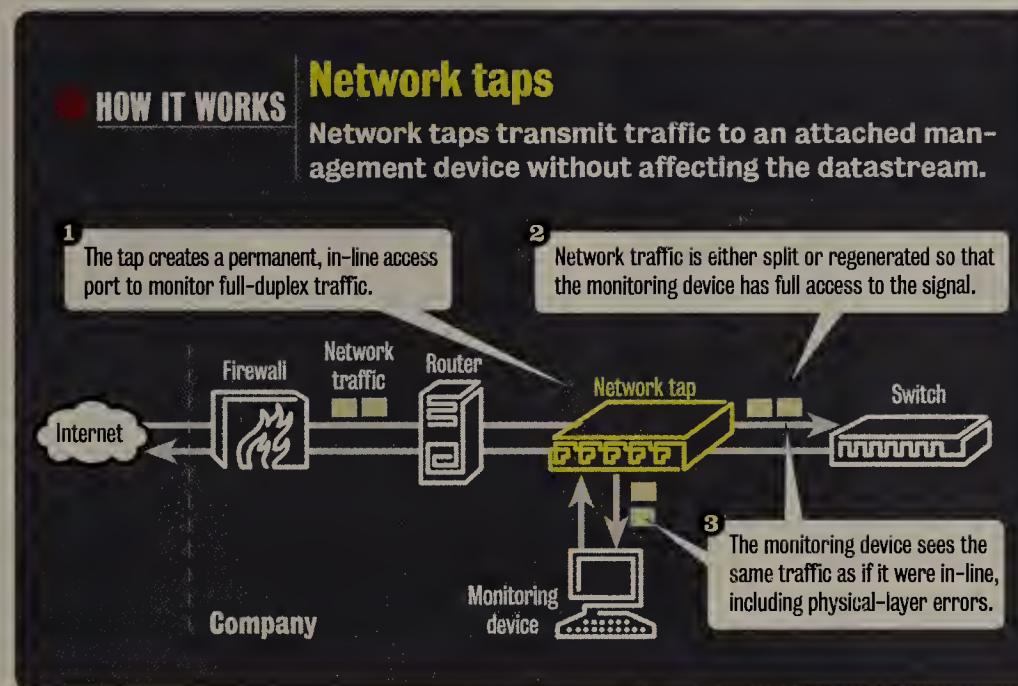
Network taps modify the strength of the transmitted network signal, so that it can be received by the other network device and the monitoring device attached to the tap.

Taps are called passive devices because they don't act on network traffic. If a tap fails, traffic continues to run, and the network is not affected.

In the case of fiber taps, the key internal components — fiber-optic splitters — do not require power. So they're not vulnera-

Got great ideas

■ *Network World* is looking for great ideas for future Tech Updates. If you have one and want to contribute it to a future issue, contact Features Editor Neal Weinberg (nweinberg@nwfusion.com).



ble to a power outage. Two key aspects of fiber taps are split ratio and light source.

The splitter divides the light signal into two wavelengths, and the tap needs to make sure the network signal has enough strength to make it to its destination.

Fiber taps

The split ratio for fiber taps is determined by factors such as the devices' transmitter strength and receiver sensitivity, net losses from cable connections and length.

Because the goal is to maximize the signal retained in the network, the optimal split ratio is the highest. So if 70-to-30, 60-to-40 and 50-to-50 split ratios are viable, then splitters with a 70-to-30 split ratio are optimal.

Splitters also need to support the light source used on the links. For example,

Gigabit SX devices transmit data using 850 nm lasers, so Gigabit SX taps should have compatible splitters.

This ensures accuracy in the insertion losses dictated by the chosen split ratio. Performance will not degrade from the laser light intensity, which could occur if splitters supporting lower-intensity LED transmission were used on these links.

Copper taps

Copper taps regenerate the transmitted network signal, instead of splitting it. Regeneration amplifies the signal to a level where it can be received by the other network device and the monitoring device.

Regenerating the electrical signal takes place on a powered board. When power is available to the tap, the electrical signal passes through an open bypass circuit to

the area of the board where regenerating and directing the signal takes place. Copper taps are beginning to feature fail-safe reserve power within the tap to maintain this availability.

If power is not available, the bypass circuit closes, so the transmitted signal passes directly to the receiving network device. The bypass circuit requires no external input, so copper taps remain passive.

On the monitoring side, all taps are dual-transmit devices, transmitting both sides of the signal from a full-duplex link. By design, taps don't have receive ports on the monitoring side, so they can't receive information from the attached monitoring device. This can effectively render the attached monitoring device invisible to the network, eliminating it as an attack target.

Tap technology is used for monitoring in-line network traffic, particularly for switched networks. Installing taps can add unprecedented visibility, allowing complete access to traffic on any link. Because taps are passive and do not interfere with the datastream, taps can be deployed permanently in-line without affecting network performance. Once taps are in-line, managers and administrators can monitor without changing any network connections, enabling 24-7 monitoring with zero downtime, with any device.

Taps are available for all major network technologies, including 10/100M bit/sec Ethernet, Gigabit Ethernet, 10 Gigabit Ethernet, Fibre Channel, SONET and ATM.

Fisher is the marketing manager for Net Optics, a leader in passive tap and matrix switching technology. She can be reached at afisher@netoptics.com.

Ask Dr. Internet

By Steve Blass

Can Ethernet networks support quality of service?

Raw Ethernet networks do not provide quality of service (QoS) policy management controls directly. Ethernet QoS policy management can be provided through LAN switching equipment by using certain extensions to the Ethernet standard. The 802.1Q Ethernet specification includes a tag, inserted into Ethernet frames, that defines virtual LAN membership. Three bits in this tag identify priority as defined by 802.1D (previously 802.1p) to

provide for eight priority levels. Switches and routers can use the tag to give traffic precedence by queuing outgoing frames in multiple buffers. 802.1D provides Differentiated-Services functionality for Ethernet segments. Diff-Serv is an IETF specification that works at the network layer by altering the IP type-of-service field to identify particular classes of service. Diff-Serv is a class-of-service management scheme rather than a true QoS implementation. Other internetworking protocols available for supporting QoS are Resource

Reservation Protocol, used to reserve end-to-end network resources for a particular network flow (in one direction); Real-Time Transport Protocol, which is optimized to deliver real-time data such as audio and video streams through multiplexed UDP links; IP Multicast; and Multi-protocol Label Switching.

Blass is a network architect at Change@Work in Houston. He can be reached at dr.internet@changeatwork.com.

GEARHEAD
INSIDE THE
NETWORK
MACHINEMark
Gibbs

Our friend Bob runs a very good software development company. And one talent he's proud of is being a god of Microsoft Excel pivot tables.

This might not seem like a big deal to you, but the ability to analyze data and turn it into information is crucial when you are running a business, particularly when you're dealing with software development, which tends to generate all sorts of curious statistics and data sets. The ability to perform a fast, ad hoc analysis makes life much easier.

Now like many people, you might have heard of pivot tables, but like most, you might not have figured out how to use them. So this week, we'll explain how they work and how you might use them.

A pivot table is a tool that creates cross-tabulations. This means you can ask questions such as how many times a data item occurs (for example, how many Web access attempts to each

Become a pivot table god

unique Web site are in the log?) or how many times that data item occurs in relation to other data items (how many times did each employee access each individual Web site?).

Let's say you have a log file (we talked about syslog in this column some time ago — see www.nwfusion.com, Doc-Finder: 2837) of SNMP traps captured by Kiwi Syslog Daemon from a LinkSys EtherFast DSL router.

With a little judicious configuring of Syslog Daemon's filters, you can create a capture file of all Internet requests by selecting only SNMP messages that originate from the IP address of the DSL router. After a bit of massaging (replacing all spaces with tabs and adding headings to each column), you can open the file in Excel.

You should now have your data in columns and those columns should include date, time, destination IP address, source IP address, destination port and source port.

Next, under Excel's Data menu option you click on PivotTable and PivotChart Report. This invokes a wizard that asks from where you are going to get your data. You accept the default of "Microsoft Excel list or database" and click Next.

Then you select the data range, the destination for the pivot table (a new sheet) and click Finish. What you get is a table on the new sheet with a dialog box labeled PivotTable Field List and a tool palette labeled PivotTable.

The table at this point has no contents. It does, however, have regions outlined in blue that sport the labels Drop Row Fields Here, Drop Column Fields Here, Drop Data Items Here and Drop Page Fields Here. By dragging and dropping the fields from the PivotTable Field List onto the various regions, you can create different analyses of the data.

For example, using the data you have, drag the To IP Address field to the Drop Row Fields Here region, From IP Address field to the Drop Column Fields Here region, and the Time field to the Drop Data Items Here region and voilà!

You now have a table that tabulates how many times each source IP address has attempted to access each destination IP address, complete with totals for each row and column, and a grand total.

Now drag the Date field to the Drop Page Fields Here region. You'll notice that if the field has multiple values when you drop a field on a region, there will be a triangle to the right of the title. Clicking on

the title produces a list of the data items so you select what you want included.

In the row and column regions you can select which values are displayed, while selections in the page region control which groups of field and row items are used. In our example, selecting dates in the page region will restrict which "from" and "to" IP addresses are included in the table, letting you, in effect, sort by date.

Grief saver

The value of pivot tables lies in ad hoc analysis. Where you don't need them is where there's a ready-made tool for analysis. For example, Web logs usually are better analyzed with specifically designed analysis tools. But when you run up against the limits of an analysis tool or wind up (as seems all too common) with a data set for which no tool exists, pivot tables can save you from all sorts of grief writing custom code to handle the job.

There's a lot more to pivot tables and no end of compendious tomes on the subject. With a little work, you can learn how to use them effectively and become, like Bob, a god of pivot tables.

Tabulate to gearhead@gibbs.com.



Cool Tools

Quick takes
on high-tech toys
By Keith Shaw



Siemens hopes to increase its U.S. presence with new GSM devices.

Siemens launches new GSM phones

Siemens Mobile recently announced a bunch of GSM devices for North American wireless users, with the aim of increasing its presence in the U.S. The phones from Siemens include:

- The S56, a mobile phone with a detachable camera and integrated flash. The phone will let users send images via Multimedia Messaging Service, Siemens says. It is General Packet Radio Service (GPRS)-capable for high-speed wireless data access, and includes Bluetooth, Java for download of business applications, polyphonic ring tones, a color screen, hands-free voice dialing, voice command and voice memo.

- The CT56, which Cingular Wireless will sell by year-end. The phone includes eight changeable CLIPit covers, and has Enhanced Messaging Service (EMS) capabilities that add pictures, video, graphics and sounds to text messages. It is GPRS-capable and has Java for downloads, polyphonic ring tones, hands-free voice dialing and voice command. Siemens says the C56, similar to the CT56, also will be offered to non-Cingular customers.

- The A56, an entry-level phone that includes eight changeable covers, is GPRS-enabled and includes EMS

text-messaging.

Siemens also says its M46 phone will work on the T-Mobile network. Its SX56 Pocket PC Phone will be sold through AT&T Wireless for \$550.

For more information on the new phones, go to www.siemens-mobile.com.

Four cool Web server tools

Port80 Software has four new Web server software modules for Microsoft's Internet Information Server that it says can "address the gaps between IIS and the Apache Web server functionality."

The modules — URLSpellCheck, CustomError, ServerMask and CacheRight — aim to increase security, performance and user experience for IIS users, the company says. Details of the software:

- URLSpellCheck (\$120) fixes misspelled URLs and broken links automatically as requests come into the Web server.
- CustomError (\$30) is a custom-error page management system for developers. The company says all error pages are integrated with a site's design to give useful direction to Web site users.
- ServerMask (\$25) adds to security from low-level hackers by changing, hiding or obscuring server header data in an HTTP transaction.
- CacheRight (\$150) adds intelligent cache management for developers to reduce bandwidth utilization and increase the page load speed of a Web site.

All four modules offer a free 30-day trial. Go to www.port80software.com for details. The software supports

Windows NT, 2000 and XP with IIS 4.0, 5.0 and 5.1.

Sitekeeper 2.0 released

Executive Software has unveiled the newest version of its systems management tool, Sitekeeper 2.0.

New features include support for XP (in addition to Win 2000, NT, ME and 95); an inventory tracker, which lets an IT manager instantly see what hardware and software is deployed throughout a site; a license tracker, which shows software license compliance; PushInstaller, which lets users rapidly install or uninstall software, updates, upgrades and patches on selected machines throughout a site from a central location; and support for laptops and machines intermittently connected to a network.

More information is available at www.execsoft.com.



Sony gives surfing lessons to robot dogs

Sony's Entertainment Robot America division has released AIBO Speed Board, a four-wheel scooter device that lets the robot dogs skate. The Speed Board will be available in mid-November for about \$250.

Compatible robot models will be able to respond to voice commands, so users can tell the AIBO to "turn left" or "turn right," Sony says. For more information, go to Sony's AIBO Web site (www.us.aibo.com).

Shaw can be reached at kshaw@nww.com.

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MERCURY INTERACTIVE



EDITORIAL

John Gallant

Web Services Showdown to rock ComNet

One of the innovations we're proudest of at *Network World* is our Showdown debates. Since the mid-1990s, we've brought together the leading vendors in virtually every key technology area to argue the pros and cons of their products and strategies.

Network management, frame relay, operating systems, voice over IP, switching, broadband, Linux, application service providers — you name the issue, we've staged a PowerPoint-free debate on the topic.

Just about every major technology company has stepped up to participate — AT&T, Cisco, IBM, Microsoft, SBC Communications, Sun and many more. We've held debates at NetWorld+Interop, Linux World, ComNet, Comdex, Voice on the Net and almost every other important conference in the IT industry. Thousands of customers have attended and learned from the robust debate.

Happily, the Showdown tradition will continue in 2003.

Thanks to the good folks at ComNet, who took a chance and let us stage our first Showdown in 1995, I'll be hosting a Web Services Showdown from 12:45 to 2 p.m. Jan. 28 at the ComNet conference in Washington, D.C.

Web services are the talk of the tech town these days. They promise to make the extended enterprise a reality — linking applications and resources across private networks and the Internet to smooth business transactions and boost productivity. But what's the reality behind the megahype surrounding Web services? What works and what doesn't? Who's supporting what standards?

That's what we'll explore at the Web Services Showdown. IDC analyst and Web services expert Tony Picardi will join me in grilling four leading suppliers of Web services.

Then, we'll let the vendors ask each other questions and take questions from the audience. No one will know the questions in advance, and the Q&As will be candid and unscripted.

So who'll be up on stage? Tony and I are challenging BEA Systems, IBM, Microsoft and Oracle to send their top technology strategists to take part in the debate. The companies will have until Nov. 20 to let me know if they are up to the challenge. If one of them balks, we'll invite a competitor.

Not to worry. In seven years, we've only had a couple of companies shirk from the challenge. I have no doubt that BEA, IBM, Microsoft and Oracle will jump at the chance to outline their Web services strategies.

Now it's up to you to mark the date on the calendar. Join us!

— John Gallant
Editorial Director
jgallant@nww.com

opinions!

More on GoToMyPC

In discussing ExpertCity's GoToMyPC in his column "Always on" programs pose an 'always on' threat" (www.nwfusion.com, DocFinder: 2823), Kevin Tolly states: "While there is clearly no evil intention on the part of ExpertCity, I find it unsettling to have scads of corporate desktops in constant communication with a third-party service that, through its 'mole,' can determine how often your PC is busy when you're in the office and so forth."

It's more than unsettling. This is essentially a third-party VPN that your company's IT group might not have approved. Using it might violate corporate security and network policies, such as who owns and runs your company perimeter services (that's what a VPN is), your acceptable use policy, your authentication policy, and others. One possible approach to deal with this is to block all outbound IP traffic from your company to the GoToMyPC subnet.

Paul Dodd
Seattle

In light of Steve Janss' favorable review of GoToMyPC ("Telework tools that work," DocFinder: 2824), I was surprised to note inaccuracies in Kevin Tolly's statements about the security and administrative features of GoToMyPC Corporate 3.0.

Tolly states, "While the company offers packaged enterprise services, they don't offer an 'opt out' for companies that don't want to let desktops in their domain use the service." This statement warrants correction. GoToMyPC does offer a free service to organizations that wish to prevent unauthorized use of GoToMyPC. The Authorization Management Service (AMS) allows an organization to permit only authorized corporate accounts to use GoToMyPC Corporate within their corporate LAN. The service

E-mail letters to jdix@nww.com or send them to John Dix, Editor in Chief, Network World, 118 Turnpike Road, Southborough, MA 01772. Please include phone number and address for verification.

blocks personal and other corporate accounts from setting up or accessing a computer within the LAN. The service is open to any organization that would like to restrict usage of GoToMyPC within their LAN.

The AMS has been a widely successful program since its introduction in May. We explain the AMS in our FAQ on the GoToMyPC Web site (www.gotomypc.com).

Heidi Wieland
Manager, Corporate Communications
John Connolly
Product Manager,
GoToMyPC Corporate Products
ExpertCity
Santa Barbara, Calif.

Tolly replies: I am glad to see that this feature is available. In conducting my research, I investigated the information supplied in the Corporate section of your site rather than the generic Help path off of your home page. I suspect that noncustomer companies looking to block GoToMyPC access would have as difficult a time as I did in finding the information buried in a general FAQ page. A prominent icon about AMS on the Corporate page and an online form to fill out to request it would be welcome.

Who needs land lines?

Regarding Johnna Till Johnson's column "Why the cable companies will win" (DocFinder: 2825): Another point to ponder is the increased use of cell phones. Many households are getting rid of their land lines altogether and using their cell phones. For them, it's more practical and cost-efficient to just use a cable broadband offering. I'm renting an apartment and will use my cell phone exclusively rather than purchase a telephone service. I also will get cable TV and a cable modem for Internet access.

Sean Heffley
Pittsburgh



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www.nwfusion.com Find out what readers are saying about these and other topics. DocFinder: 2821

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OUT OF THE BOX

John Hagel

Web services are being deployed today at a surprising pace. In fact, deployments might be underway already within your company without you knowing about it. Why? Often, corporate executives lead these initiatives. They want to move quickly to solve a business problem and don't want to attract a lot of attention from central IT. They worry that IT, concerned about the immaturity of the technology, will try to delay their efforts. So they fund undercover efforts to deploy the technology.

Want another worry? Based on a survey of early adopters, the majority of these deployments are at the edge of corporations, crossing firewalls to connect with business partners. These aren't just harmless experiments behind the firewall. They support mission-critical business processes with either suppliers or distribution channels.

What should IT executives do? First, resist the temptation to find and punish the guilty. Instead, applaud the fact that business executives are grabbing on to a new technology and championing its deployment.

Next, inventory existing initiatives deploying Web services. Make them visible. Find out which initiatives need help and work to support them.

At the same time, discuss with senior business management the potential and limitations of this technology. Help to develop a more systematic approach to target the highest potential business opportunities. Design a migration plan for the broader technology architecture. Anticipate the networking implications of Web services. After all, this

Caught off-guard by Web services?

technology is built on a service model that assumes applications and data can be accessed anywhere. Yet, few companies have thought through how networks will need to evolve to support Web services. Build alignment within senior management around a coordinated game plan to harness the economic value of this technology.

As the plan comes together, work to deepen your Web services capability. Chances are, your company is still pretty thin in terms of Web services skills. Find third parties to help supplement your capabilities in the near term and fill in gaps as quickly as you can.

Champion the emergence of service grids to off-load a lot of the complexity and reduce the capability burden on your company. Service grids represent federations of shared enabling services that support the performance requirements of application services. They can offer specialized services in areas such as reliable messaging, performance monitoring, security, data translation and synchronization of services. Companies such as Grand Central Communications, Commerce One and E2open are beginning to address this need.

Adoption of Web services is accelerating. The horse is out of the barn. It might not be too late to build a fence around the pasture, but it is time to get out into the field and develop an action plan.

Hagel is a management consultant based in Silicon Valley and author of a new book, Out of the Box: Strategies for Achieving Profits Today and Growth Tomorrow through Web Services. He can be reached via his Web site at www.johnhagel.com.

Few companies have thought through how networks will need to evolve to support Web services.



ON SECURITY

Winn Schwartau

I heard a great quote this morning: "New York ain't what it used to be." Sure, we all know that too vividly. But in this case, the quote refers to the increasing amount of temporal dispersion occurring, in this case, in lower Manhattan. The nerve-rattling amount of data-center concentration in the financial sector now is finding itself getting ready to be spread hither and yon. The same kinds of discussions are occurring in Washington, D.C., Chicago and other critical infrastructure-centric metropolitan areas.

Temporal dispersion is an attempt to balance a business' risk by spreading critical hardware assets over a greater physical distance than heretofore thought necessary. The corollary is to spread our best and brightest to these different locations and put them on duty 24-7. So if the IT hits the fan, some of the experts will still be around to reconstitute mission-critical systems. This is a smart and long overdue move.

Consider what we lackadaisically have assembled in the last couple of decades:

- Huge data centers in high-rise buildings that were built for beauty and bragging rights, not physical security.
- Back-up data centers in the same buildings.
- Data centers on the ground floor or beneath ground and, often, the water line.
- Reliance on public communications lines for backup, redundancy and business continuity.
- Secondary power sources designed to work but are rarely tested.

So along comes temporal dispersion, which, depending on to whom you speak, yields a variety of interpretations. Because we don't know when or how attacks might occur, we need to consider several added variables we might not have a year ago. A systemic network failure because of an attack can have farther-reaching consequences than previously thought. We know collocation of critical infrastructures is a recipe for disaster, but many companies do little about it.

A physical attack is more likely than in the past and the effects of collateral damage on nearby critical infrastructure can be just as debilitating. Large metropolitan areas share common utilities, even

Becoming safer by spreading out

across spans of 10, 20 or 50 miles.

Perhaps the scariest aspect is that we also concentrate our people, our best and brightest, in single locations at the same time. Think about your own shop: How many of your top technicians work the day shift? What percentage of your techs work second or third shift? Are they your best, or are they the second string? How many of your primary technical staff members work in the same physical location?

In the early post-Cold War days, some firms found it enticing to put their contingency resources into hardened missile silos from Nebraska to Montana. Today, talk is of using the long-forgotten "home bases" of Minuteman missiles because of their proximity to critical East Coast assets. West Virginia is a popular alternative data center site, in part because of the lobbying efforts of Sen. Robert Byrd and in part because the cost of living is appreciably lower than in nearby Washington.

Moving techs and support staff to lower-cost areas or offering commuting bonuses is one reasonable approach to temporal dispersion efforts. But what about management? Do they temporally disperse, too? Or is it business as usual, with the same daily concentration of top brass in single facilities, convenient to them, their homes and their current lifestyles? If the techs are all there and the management is all gone, who is going to run the show? The national security term is continuity of government. Organizations should take the same view of their own survival and continuity.

Part of the new reality we are facing is that high-tech network defense intrinsically means physical defense of fixed assets, physical dispersion of certain others, including contingency, awareness of the strengths and weaknesses of supporting critical infrastructures, and the temporal dispersion of people to keep it all working.

This might not be what we all signed up for. But there are much worse things in life than living in the country, working in a hardened and safe silo and cutting personal expenses by one-third. Much worse.

Schwartau is president of Interpact, a security awareness consulting firm, and author of several books, including the recent Pearl Harbor Dot Com. He can be reached at wirns@gte.net.

We know collocation of critical infrastructures is a recipe for disaster, but many companies do little about it.

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Maturity brings a new face to IPSec VPN products

Progress brings lower prices, deviation from standards, but still no centralized management.

As the VPN market approaches maturity at a brisk pace, vendors have been forced to rethink the traditional identity of their IP Security-based technology for letting users securely access enterprise resources via the Internet.

**By Joel Snyder,
Network World
Global Test
Alliance**

REVIEW

See how 10 VPN products rank.

Page 52

A pricing chart breaks down per-user costs for 100 to 10,000 users.

Page 54

How SSL-based VPNs are on the rise.

Page 56

ONLINE

Find out more about how we evaluated VPN solutions.

www.nwfusion.com

DocFinder: 2826

See which products offer support for Mac OS and Unix.

DocFinder: 2827

Compare the 115 products in our VPN Buyer's Guide.

DocFinder: 2828

During the last 18 months, vendors have pushed VPN technology into different devices, have lessened the distinction between VPN and firewall products, and have demonstrated a strong willingness to deviate from standardized technology to meet corporate remote access requirements (see product review, page 52). What remains lacking, though, are features that offer strong centralized VPN management.

VPN technology now is built into a variety of products at all prices. Linksys' line of EtherFast firewall/VPN routers, which includes software and hardware encryption models, ranges in price from \$100 to \$180. Only a year ago, products with this level of encryption acceleration were 10 to 50 times more expensive.

Likewise, at least a dozen companies sell VPN/firewall devices that are little more than Intel-based boxes running Linux, a freeware firewall, IPSec and a Web graphical user interface. These appliances are low-priced but lack security certification and offer little by way of quality control.

At the same time, the boundaries between firewall and VPN devices have merged, virtually eliminating the dedicated VPN device category of products. With the demise over the past two years of Nokia's Crypto-Cluster, Cisco's 5000 series and products from the now-defunct Radguard and Redcreek, the last pure VPN devices have left the marketplace.

One way to evaluate combined VPN/firewall devices, says Nokia engineer Dan McDonald, is to recognize that some are better firewalls than VPN servers and vice versa. An example of the "big F firewall, little V VPN" devices is Secure Computing's Sidewinder, which has a perfectly capable VPN stack inside, but lacks in the areas of VPN manageability and functionality, such as in creation and management of large-scale site-to-site VPNs or in policy creation and distribution in remote access VPNs.

In the "little F firewall, big V VPN" category is Avaya's VSU series. Its mediocre packet filter is incidental to its outstanding VPN features.

This merger of firewall and VPN technology is good news for corporate network professionals on two fronts. The first is a greater opportunity to deploy VPN technology without having to compromise on network design. The second is enormous price pressure on all parts of the market in the customers' favor.

■ Management is missing

Centralized VPN management is not a problem that vendors have been able to solve. Skeptics charge that vendors don't care to solve it either, as doing so could open the door to multivendor VPN deployments. As *Network World* has proven in lab tests (see www.nwfusion.com, DocFinder: 2829), building interoperable VPNs is not impossible — one can make almost any two IPSec products communicate. But managing all these VPN devices from a single point of view is not possible at this point in time.

Very few manufacturers have even started to think about what it takes to configure and maintain a VPN network with more than a dozen of their

own nodes that changes in topology more than once a year. Cisco limped along with its Cisco Secure Policy Manager for most of this year but has recently introduced a management platform called CiscoWorks VPN/Security Management Solution Version 2, which the company says makes inroads into centralized management. Likewise, Check Point Software is making headway with its inclusion of management in its Feature Pack 2 of its NG firewall released in April. But again, in both cases, the vendors have addressed only management of their own devices.

Third-party management vendors have not stepped up to the plate either. Some carrier-focused vendors, such as Orchestream, offer VPN management tools, but no significant effort has gone into giving corporate network managers a tool to link multiple VPN products into a single cohesive network.

■ Nonstandard standards

While IPSec is more widely used than Secure Sockets Layer (see story, page 56) for securing VPN connections, the standards are woefully inadequate for remote access. The political infighting within the Internet Engineering Task Force has resulted in a stunted specification that doesn't meet the needs of even modest remote access deployments in the areas of authentication, internal addressing, and Network Address Translation/Network Address and Port Translator traversal. More advanced requirements, including accounting and policy management, are ignored completely in the IPSec standards.

Even more disappointing is progress on Internet Key Exchange Version 2, the protocol used to set up IPSec security associations where issues such as authentication and address assignment are handled. While the IETF working group is arguing minute details such as whether two or three round trips are necessary to set up a security association, most of the remote access problems remain unaddressed.

Vendors have been forced to build nonstandard mechanisms to support secure remote access in large networks. The situation is exacerbated as the VPN market matures — what were minor proprietary extensions in the past are now wholesale departures from the standards as written.

Customers should be aware that the better the remote access product, the more likely they will be tied to a single-vendor solution. In our accompanying review, the best-scoring products were those that broke the IPSec standards with the greatest abandon — and those that have the least interoperability outside of the vendor-supplied client.

One key strategy to deploying remote access VPN technology is to separate it from site-to-site VPN deployments. Do not tie the remote access services to an existing firewall or VPN server. Feel free to jump ship to the most appropriate technology and server for your enterprise.

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Remote access VPN products

Rolling out remote access

Cisco and Check Point earn top scores for enterprise readiness.

By Joel Snyder,
Network World
Global Test
Alliance

VPNs have been brought road warriors and telecommuters into the corporate network fold since Microsoft bundled Point-to-Point Tunneling Protocol into Windows 95. But with more sophisticated networks and VPN services more pervasive, basic requirements for remote access VPN products have changed to keep up. A manual deployment to a few dozen users might be fine for a pilot project, but rolling out remote access on a corporate scale demands exceptional products with exceptional scalability.

We invited leading IPSec-based VPN vendors to provide their best products for serving up enterprise-class remote access to thousands of users. We tested 10 products from ActiveLane, Avaya, Check Point Software running on Nokia's hardware, Cisco, Cylink, Imperito Networks, NetScreen Technologies, Secure Computing, SonicWall and Symantec. (For declining vendors, see story, page 53.)

In our evaluation, we considered deployment and support burden, management overhead, suitability for enterprise networks, flexibility, reporting capabilities and client support (see How we did it, www.nwfusion.com, DocFinder: 2830). Rather than focus on a particular model of VPN server, we encouraged VPN vendors to show us an entire set of products that address remote access VPNs, including concentrators, management applications, and hardware and software clients (see NetResults for full product listing, below).

Cisco and Check Point came in way ahead of the pack in our tests. While Cisco barely edged out Check Point in the overall score, we handed both products a

World Class award because both companies have clearly considered the issues of enterprise remote access and built products that are easy to use, deploy and update, but are not arbitrarily limiting in terms of policy, platform or features.

Honorable mention, though, goes to NetScreen and Avaya. While neither product set offers all the features and flexibility of the winners, they've assembled systems that generally do a good job attacking the problem of large-scale remote access and offer specific product details that also might sway a decision in their favor. Avaya's specialized support for voice-over-IP (VoIP) applications is better than any other, while NetScreen's broad range of hardware lets you precisely fit resources to requirements.

■ Deployment

VPN clients have two pieces: the client software and the abstract policy that defines how communications are encrypted. Deployment means getting the software and policy information to end users and keeping both updated as the

network configuration and topology changes.

Client software installation was generally easy across products. The notable exception is ActiveLane, which is designed to work with built-in Windows VPN clients — both PPTP and IP Security (IPSec)/Layer 2 Tunneling Protocol (L2TP). Not having to do anything at all because the software is already there makes for a pretty easy installation.

On the policy side, some vendors, such as Secure Computing and Cylink, keep a policy file (often called a policy blob) sitting on each client. This is problematic because if you change your network configuration or the IPSec tunnel, you'll need to push the policy blob out to each client. In an enterprise environment where not everyone has the same VPN policy, the problem is exacerbated because you must ensure each client has the appropriate blob.

A better enterprise solution is to use a policy server that works with the client to keep the policy up to date. The client connection will take a little longer, as pol-

Net Results



ActiveLane V3000 VPN Server Appliance

Company: ActiveLane, (800) 276-0578, www.activelane.com **Pros:** Works with built-in Windows 2000/XP client; integrates with Active Directory very cleanly; excellent alerting facilities; good reporting and real-time status. **Cons:** No real firewall beyond packet filters; hardware client inflexible.

VSU 1000 Concentrator, VSU 5X Hardware Client, VPNremote Client

Company: Avaya, (908) 953-3348, www.avaya.com **Pros:** Automatic policy update for multiple groups; excellent RADIUS support; easy management system installation; simple hardware client. **Cons:** Hardware client management not yet available.



FireWall-1 NG on Nokia IP350, Nokia IP30 Internet security appliance, SecureClient

Company: Check Point Software, (800) 429-4391, www.checkpoint.com **Pros:** Automatic policy update for multiple groups; excellent multigateway support; excellent client-side firewall; easy to firewall VPN; strong multiplatform support. **Cons:** Single gateway per management domain; difficult to manage packet filters.



Cisco VPN 3000 Series Concentrator, Cisco VPN 3002 hardware client, Cisco VPN Client

Company: Cisco, (800) 553-6387, www.cisco.com **Pros:** Automatic policy update for multiple groups; good client-side firewall; good real-time status; multiplatform support. **Cons:** No support for internal addressing; no RADIUS support; poor certificate support; no real firewall.



NetHawk VPN gateway and clients, Privacy Manager for NetHawk

Company: Cylink, (800) 533-3958, www.cylink.com **Pros:** Easy management installation. **Cons:** No support for RADIUS or certificates; no support for multiple user groups.



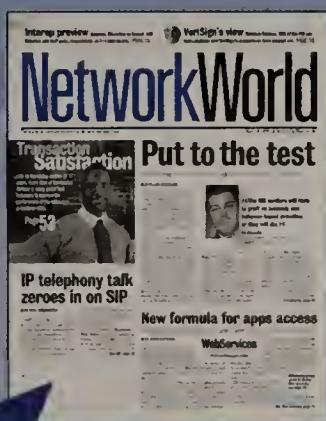
SafeSecure Access Policy Manager, Integrated SafeSecure Access Gateway, SafeSecure Access Client

Company: Imperito Networks, (866) 467-3748, www.imperito.com **Pros:** Very simple installation and management; easy client and policy update. **Cons:** Full management system difficult to install.

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icy versions are checked, but, in return, end users never have to wonder if they've got the right version of the policy.

Avaya, Check Point, Cisco, Imperito, NetScreen and Symantec all handle this cleanly and elegantly through the use of policy servers, but only Avaya, Check Point, Cisco and NetScreen let you maintain multiple user policies. With Imperito, all users who connect to a VPN gateway get the same policy. Symantec supports per-user policies, but only for users who are entered individually into its internal authentication database, eliminating the possibility of using external authentication servers for multiple user policies, which makes the feature useless in any sizable deployment.

Clients also are subject to updates, upgrades and patches. Check Point, Cisco, Imperito and, to some extent, NetScreen deal with this problem in the context of the VPN policy you define. The slickest is Imperito's SafeSecure Access, which not only manages the update but also keeps track of what Imperito client version each user has on his machine.

Check Point has a generic software download and maintenance system built into its client, not just for the VPN software, but for anything you want to upgrade on remote users' systems.

For network managers who don't want to learn all the nuances of Check Point remote client management, a simplified version can keep the VPN client up to date.

The same question of deployment comes up in hardware VPN clients. Hard-

ware VPN clients are little boxes with dual Ethernet ports that sit in front of one or more client machines and off-load the VPN connection, eliminating the need to load software or policy on the end system. Because hardware clients are generally unattended and unmanaged, getting policy updates to them is a particular problem.

While Avaya, Check Point, Cisco, NetScreen and SonicWall ship hardware clients, Cisco and Avaya offer the cleanest hardware client management.

With Cisco's hardware client, you tell it the IP address of the policy server, a user-name and password pair with which to authenticate, and that's it. Systems behind the hardware client are encrypted automatically when they attempt to connect to systems the VPN protects. The hardware client downloads the policy as needed. In Avaya's model, each user who passes through the hardware client needs to be authenticated individually to the policy server via a Web page.

NetScreen and SonicWall treat their low-end VPN systems as hardware clients. These hardware clients must be configured using a model different from simple remote access. The issue is that these hardware clients are managed using push techniques, rather than pushing policy from a central server. Push doesn't scale well or work well even in small installations if the hardware clients have dynamic IP addresses behind a Network Address and Port Translator (NAPT) box, which is typical in many cable modem and DSL remote deployments.

Another aspect of managing remote access clients is getting some kind of control over the affiliated pieces that have snuck into the products, specifically client-side firewalls. In Check Point's model, the optional client-side firewall is configured using an interface very similar to that used for dictating enterprise firewall rules. A miniature version of its firewall packet inspection engine is installed on the client, and the VPN and firewall configurations are packaged together as a single policy blob, which the central policy manager automatically updates and controls.

Security managers get intense and precise control on what the client can do when it's part of the VPN.

Cisco and NetScreen also do a good job managing client-side firewalls. Cisco's interface is not as elegant as Check Point's, but it lets you set primitive packet filters programmed into the client firewall and set up some ties with other centrally managed products from Zone Labs and Internet Security System.

Cisco and NetScreen also offer a posture assessment feature that lets you block VPN connections if the firewall is not currently active.

Most of the other vendors package a personal firewall with their VPN client (ActiveLane, Avaya and Cylink are exceptions), but there's no support for central policy management and updating integrated with VPN management.

■ Suited for enterprise use?

The IPSec standards are virtually mum

on the topic of remote access. To compensate for this, most VPN vendors have extended the standards in several ways. While departing from the standard is usually a bad idea, there really is no way to build a good IPSec remote access VPN without taking liberties. This reduces interoperability, of course, and ties you to a single vendor. It also reduces your choice of VPN client platforms. Although there are IPSec clients for virtually every platform, without the vendor-specific proprietary extension, a deployment of more than a handful of clients would be unmanageable.

One area where remote access and IPSec collide directly is in NAT and NAPT support. NAT and NAPT are techniques that ISPs use, especially in broadband environments, to deal with the shortage of IP addresses by having multiple users share a single IP address or set of IP addresses as their packets move toward the Internet. "NAT is the kind of attack that IPSec was designed to detect" is security designer Dan Harkins' famous quote. Nevertheless, NAPT and some kind of dynamic addressing, such as Dynamic Host Configuration Protocol (DHCP) client or Point-to-Point Protocol over Ethernet, are realities in virtually all broadband network deployments. A solution that doesn't support NAPT simply won't work, and this is one reason to avoid ActiveLane's and Secure Computing's remote access VPN products. (ActiveLane actually does support NAPT when using PPTP, a less-secure alternative, but we considered this unacceptable from a security



NetScreen 50, NetScreen-Global Pro Express management system, NetScreen 5XP hardware client, NetScreen-Remote security client

Company: NetScreen Technologies, (408) 730-6000, www.netscreen.com **Pros:** Automatic policy update for multiple groups; multigateway support; good client-side firewall; easy to firewall VPN. **Cons:** NAT/NAPT support poor; element-level management.



Sidewinder; Safeword PremierAccess, SoftRemote VPN client

Company: Secure Computing, (800) 379-4944, www.securecomputing.com **Pros:** Token enrollment integration elegant; easy to firewall VPN; excellent auditing. **Cons:** No support for internal addressing; client policy management very weak.



SonicWall Pro 300 concentrator, SonicWall Global Management System, Tele3 hardware client; SonicWall VPN Client 8.0

Company: SonicWall, (888) 547-6642, www.sonicwall.com **Pros:** Above-average reporting tool; easy to firewall VPN. **Cons:** No support for internal addressing; client policy management very weak.



Symantec Enterprise Firewall with VPN

Company: Symantec, (800) 441-7234, www.symantec.com **Pros:** Easy to firewall VPN; many authentication links; excellent auditing. **Cons:** No hardware acceleration support limits total performance; NAT for internal addressing dangerous.

Who didn't come out to play

Although we had a very strong turnout for this test, some major vendors in the remote access VPN market are not included for various reasons.

Nortel, which many consider a leader in this market with its Contivity product line, couldn't provide resources to support a review of its VPN product.

Eterasys Networks, which purchased remote access VPN vendor Indus River in 2000, was between major revisions of its product and couldn't get us software and hardware in time to participate. Similarly, Alcatel, which purchased Timestep in 1999, was poised to release a major update to the Timestep Permit product line, but was not ready in time for this review. Both companies started shipping those products recently.

WatchGuard Technologies submitted hardware to be reviewed, but neglected to send all the components needed for a remote access deployment. Although WatchGuard made heroic efforts to get software and hardware to us when the error was discovered, we couldn't complete the review of its product in time for inclusion in this review.

— Joel Snyder

The bottom line on per-user pricing

We asked participating vendors to put together three configurations for us to compare the actual price per user for their products. The 100-user price includes a VPN concentrator suitable for up to 1,000 simultaneous users but licensed for only 100 users. The 1,000-user configuration has the same hardware and software, and client licenses sufficient for 1,000 simultaneous users. The 10,000-user configuration is VPN concentrator hardware and software, and licenses sufficient to support 10,000 simultaneous users. For vendors that supplied only software, we included the cost of appropriate server hardware in the price to reflect more realistic costs.



model point of view.)

Internal addressing is another nonstandard extension for remote access. Network managers find it very convenient to control the IP addresses from which clients appear to come when they appear on a corporate network. This helps with internal routing in more complex networks, because it is important that packets that came in via the VPN also go out by the same path. In addition, internal firewalls can identify which users are VPN users by their addresses, which can simplify access controls and security policy enforcement.

Cylink and SonicWall don't support internal addressing at all. NetScreen and ActiveLane support internal addressing, but only if you run L2TP as a tunneling protocol. The simplest case is to simply give a pool of addresses to the VPN concentrator and let it hand them out. Solutions that support basic internal addressing generally let you do this.

But Check Point, Cisco and Secure Computing let you control the address assignment based on user groups. Cisco and Imperito also will go to a DHCP server to get an address.

Internal addressing is one of those features for corporate VPNs that can be a showstopper. If the details of how internal addressing is implemented are not compatible with the VPN deployment architecture, everything might fall apart. This is why it is critical to design a VPN before selecting a product and then understand exactly how these subtle details are to be implemented. Symantec implements internal addressing by doing the address translation of the VPN clients on the central site side. It's a clever solution that avoids non-standard IPSec, but if you have an application to run over your VPN that is difficult to translate properly (such as VoIP via H.323) or that isn't supported in the Symantec NAT code, then you've got a serious problem.

■ Authentication

One of the most difficult parts of a remote access VPN deployment is authentication, because the IPSec standards admit only one type: public-key infrastructure (PKI)-based digital certificates. Very few companies have rolled out PKI for user authentication, which means that the only way to build a workable remote access VPN based on IPSec is to go around the standards.

NetScreen has developed a remote access VPN authentication process that wraps a proprietary protocol around IPSec. You authenticate to a policy server first, using NetScreen's client that gives you a copy of the current policy. From then on, you use standard IPSec functions to authenticate.

In our testing, we assumed that any company would authenticate using one of two approaches. The first uses an existing authentication system that can be connected to the corporation using Remote Authentication Dial-In User Service (RADIUS), perhaps linking to tokens or even an older username/password database, such as the Windows authentication database. The other is PKI-based digital

certificates designed for multiple applications and stored on Smart Cards. We tested both approaches.

The RADIUS test gave us the least trouble, with two exceptions. Neither Imperito nor Cylink support RADIUS-based authentication. Imperito requires that you maintain a separate user database for the VPN. As a former managed service offering, Imperito got the deployment and policy updating piece down almost perfectly, but completely stumbled when it came to user authentication.

Not everyone insists you use RADIUS for legacy authentication. Symantec will talk to a Lightweight Directory Access Protocol directory, to a Windows NT domain, and directly to Cryptocard, SecurID, S/Key and Defender servers for your choice of token-based authentication.

ActiveLane supports RADIUS, but not with any panache. The ActiveLane server is essentially Windows 2000 Routing and Remote Access Service with some percentage of the many Windows user interfaces replaced by a Web graphical user interface (GUI) and a database in the back end for management and reporting. Sometimes the interface is very elegant; in other cases, you get dumped directly into a Microsoft Management Console interface, which is the underlying control structure Microsoft provides. RADIUS is one of those edge cases where ActiveLane's configuration tools don't help. However, to use RADIUS with ActiveLane is to miss the point: The idea with this server is to authenticate to Windows, preferably via Active Directory. That's why you'd buy this product — because it has the best integration with Windows of any of the VPN solutions.

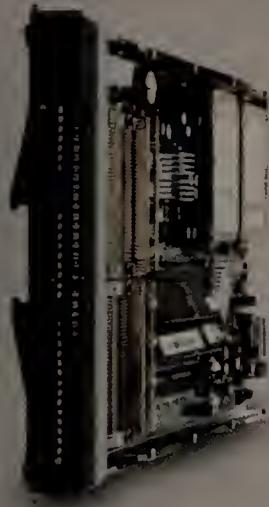
One of the few vendors to integrate VPN services and the enrollment process of assigning a token to each user into a single solution is Secure Computing. If you haven't rolled out two-factor authentication and want to just for your VPN, Secure Computing's product will save you a pile of time. The company integrates the sign-up process for your two-factor token with a Web server and vastly simplifies the difficult process of handing out and registering the tokens. If you don't like the VPN server, you still can use the enrollment tool kit with any other VPN products we tested.

Testing certificates was a headache because VPN software vendors are in a difficult position with certificates, so making products that sort it all out is difficult. Microsoft built a beautiful infrastructure for managing certificates and related technologies (such as Smart Cards) into Win 2000 (and XP). If you use its Cryptographic API (CAPI), then you automatically support almost every card reader and certificate format on earth. However, the certificate part of CAPI isn't available in Windows 98 or NT. To properly support certificates, you need two implementations of your product: a CAPI-compliant one for Win 2000 and above, and a custom-written internal one for all other versions.

Our testing was based on Entrust's PKI certificate authority. We enrolled our users and gave them certificates, stored

See VPN, page 56

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VPN

Continued from page 56

information about current users logged on to the remote access VPN.

Good support for other network integration and management functions, such as per-user or per-group bandwidth management and integration of routing protocols, was sporadic.

Cisco had a nice selection of routing protocols, routing options and bandwidth-management tools built into its product. When a site-to-site VPN tunnel or remote access user came up, Cisco could inject a route into the network to let the rest of the world know that this site or user had become available.

No other vendor offered the same level of integration for both routing and band-

width management. NetScreen offered bandwidth management of the VPN, but no routing (that is slated for its next major release).

ActiveLane offers routing and bandwidth management, but neither is integrated into the VPN. The same is true of Check Point — with its optional product Floodgate, you get some bandwidth management, but that's not part of the VPN picture. And while the Nokia platform on which we tested Check Point had a range of routing functions built in, none talked directly to the VPN part of the network. Avaya showed up with a Routing Information Protocol implementation, certainly not the routing protocol of choice for enterprise networks.

■ Making the choice

Picking a remote access VPN product isn't hard once you've taken the time to define your requirements.

You need to nail down big issues such as authentication and user policy management or you won't be able to narrow the field of potential vendors.

From there, a slew of less-important options have to be identified: Do you need internal addressing? A hardware client? Macintosh support? Client-side firewall? High availability? Multiple gateways? Firewall within the tunnel? Advanced Encryption Standard support? NAT support? All these are small in themselves, but can turn into problems if the answer doesn't match your requirements.

A proper evaluation requires that you start with what you want first and only then match products and features to identify a short list of finalists. Although Cisco and Check Point performed well in our bottom-line assessment, each has limitations that might be deal-breakers when it comes to your own corporate-sized VPN.

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Seeking security skills

Demand remains strong for IT pros who know how to safeguard systems.

■ BY CAROLYN DUFFY MARSAN

EBay has been looking to add a security engineer to its 10-person information security team since May. Despite receiving more than 100 inquiries about the job, the leading Web auction site has yet to find a person who has the right combination of experience with firewalls, authentication, operating system security and network security.

"The hiring manager has high standards," says Connie Bustillo, a recruiter for eBay. "Overall, we're not finding enough people that have the security experience we need."

EBay is not alone. Across the country, IT shops that want to beef up network security are having a hard time finding network engineers with security expertise.

The demand for network security specialists is strong despite the sluggish economy and widespread cutbacks in corporate IT spending.

CIOs anticipate a slowdown in the hiring of IT professionals during the fourth quarter of 2002, according to a recent poll of 1,400 CIOs conducted by staffing firm Robert Half Technology. However, these CIOs are moving ahead with network security projects and related hiring.

"I've had the opportunity to meet with many, many CIOs and ask them what's on their to-do lists regardless of the economy," says Katherine Spencer Lee, executive director of Robert Half Technology. "Eight out of 10 say security. Network security, data security, viruses — it's everything to do with security."

Lee says network engineers who have experience with security products from Cisco, WatchGuard Technologies, CheckPoint Software and Internet Security

Systems are in the most demand.

Dice.com, which provides online recruiting services for technology professionals, says security skills are being requested in more of the network jobs posted on its Web site. Dice.com listed 6,800 network-oriented job openings at the end of August.

"Some knowledge of security is almost becoming a requirement for all the network jobs," says Jason Medic, director of marketing at Dice. "We do see some jobs coming in as security specialists, but the lion's share of what we see are for core network designers and architects with hands-on security experience."

Having a security certification or two makes candidates for these jobs more attractive, experts say. But IT managers prefer experience to certifications.

"Certifications alone will not work," Lee

says. "You have to have real-world experience and the right attitude."

Lee advises network professionals interested in security jobs to brush up on their business savvy along with their firewall and VPN skills.

"Individuals who are going to be successful in a security center are not just those with strong technical backgrounds but those that truly take the time to get to know the business," she says.

Network security specialists also must understand the role that physical security and human resources play in keeping IT systems safe, says Dave Leighton, CEO of Risk Analysis Group, a security consulting firm.

"Companies in the past segmented their security. They had IT security separate from physical security, and they counted on HR for watching people," Leighton says. "Now we're seeing companies looking at security strategically."

Leighton says most security breakdowns occur in operations rather than in network security.

"Companies will spend hundreds of thousands of dollars on IT security to protect themselves against hackers, but they have no operational plan for what to do if an employee leaves," he says.

The industries that are most active in hir-



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ing network security specialists are chemicals, energy, healthcare, financial services, business services and government, observers say.

"Security budgets are one of the few areas of the economy where companies are still spending," says David Foote, president and chief research officer at Foote Partners, an IT workforce research firm. "The really smart IT people are going into healthcare, insurance and investment banking to get experience with privacy and security."

One plus for network professionals with security experience is higher salaries. Total compensation for corporate security positions is up 3.9% from the first quarter of 2001 to the second quarter of 2002, according to a recent Foote Partners survey on IT security compensation. This compares with a decline of 9.4% in compensation for 100 IT positions tracked in the survey.

"Security pay is outperforming IT pay for the second year in a row," Foote says, adding that this holds true for salaries and bonuses.

Four out of six security positions now pay \$100,000 or more in average total compensation, the Foote survey found.

"To get a really good person for a director-level job, you have to pay \$124,600 salary and a bonus of \$29,300," Foote says. "The director-level job is clearly where companies have to put the biggest carrot."

Foote says director-level IT security jobs are taking as long as 12 months to fill because it's hard to find a network executive with a strategic view of security, an understanding of regulatory requirements, and strong management and communications skills.

"Security has never been managed well," Foote says. "Security people are considered hard to work with because they slow down progress. . . . They're very tenacious problem solvers and have extraordinary attention to detail, but they question everything." ■

Security salaries

Overall compensation for IT security professionals has risen since last year. More dollars are being lumped in with base salaries as bonuses are shrinking.

Average annual security base pay

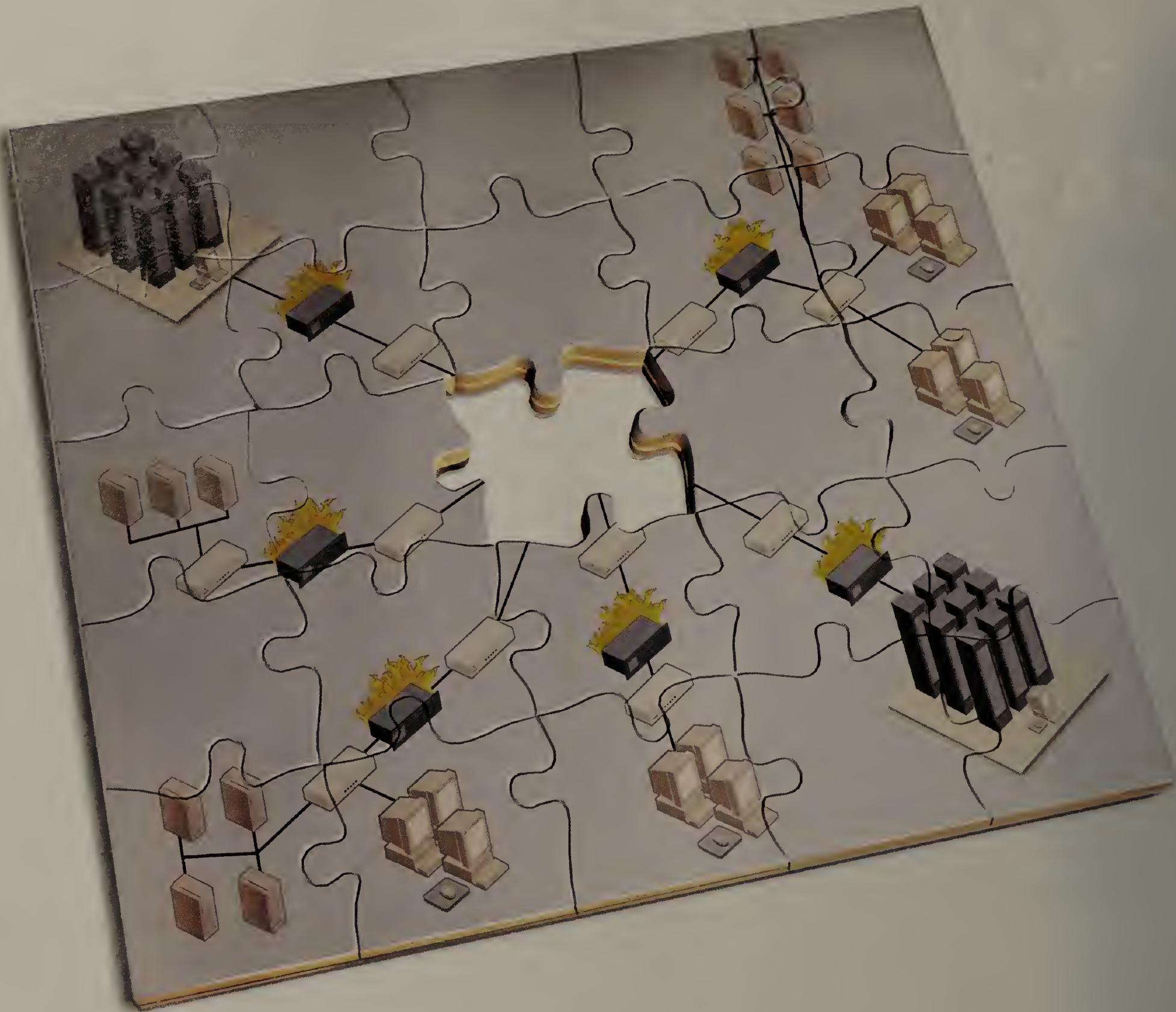


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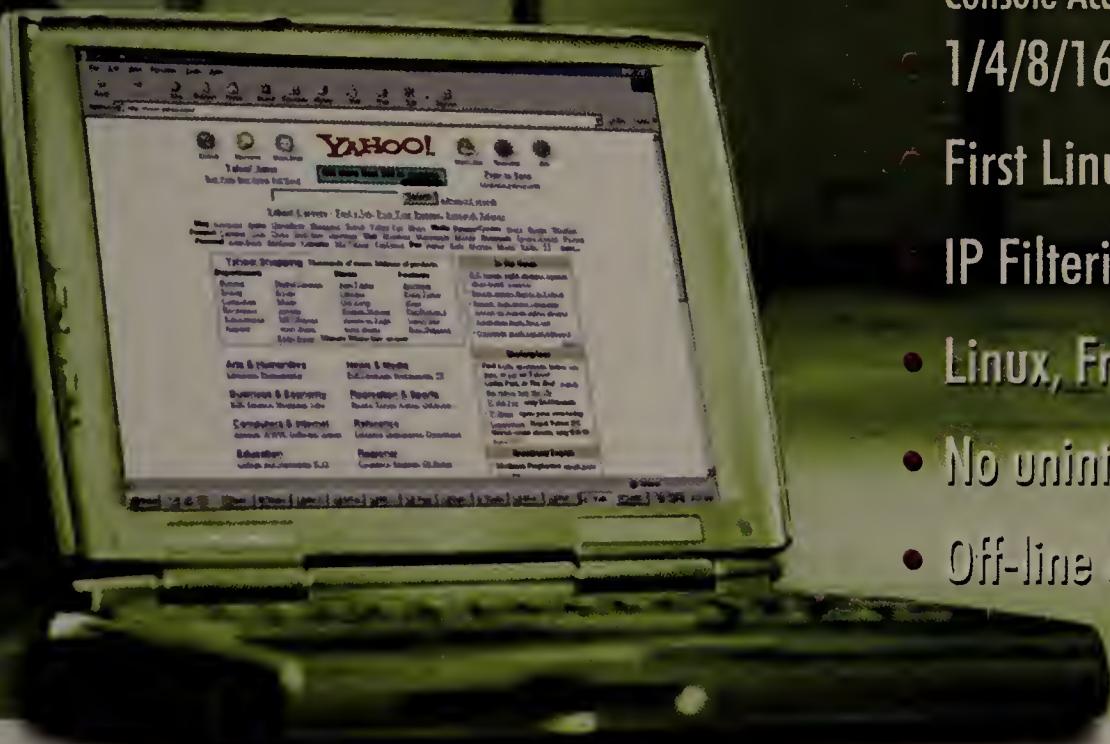
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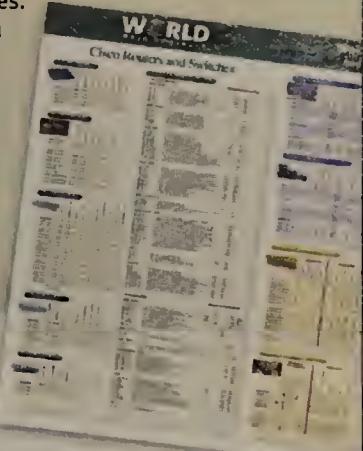
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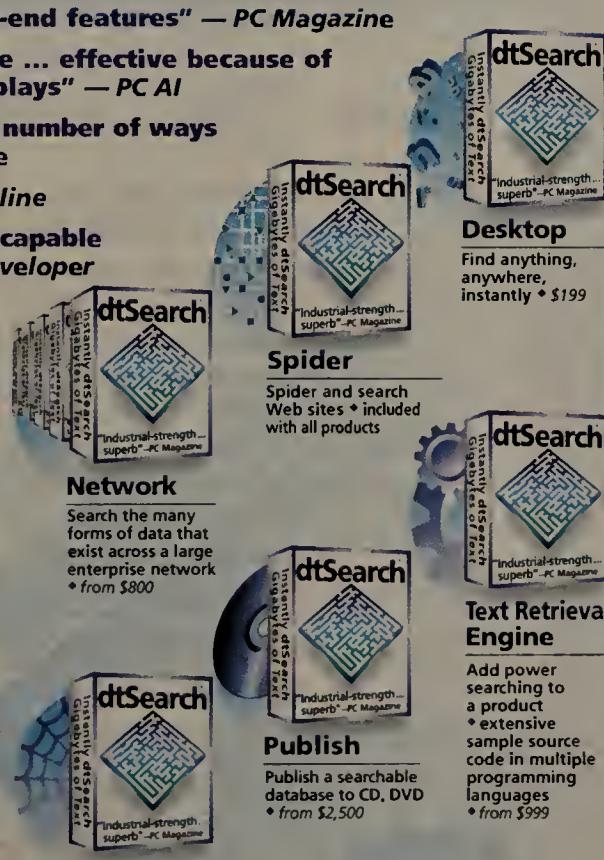
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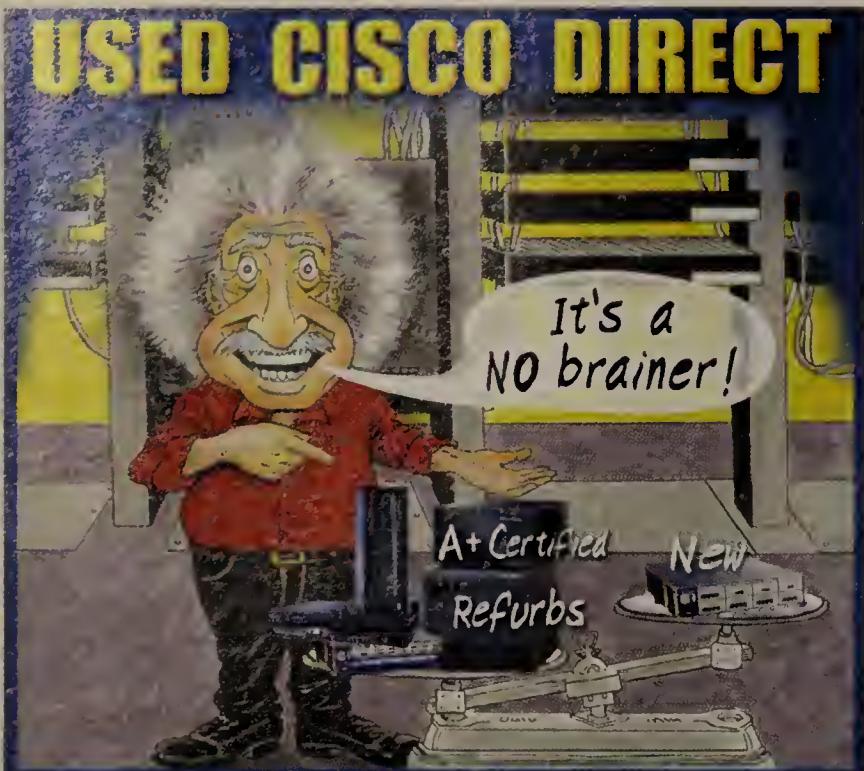
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S/W Engineers to design, develop and implement GUI and RDBMS systems in client/server envir using VB, PB, Oracle, Dev 2000, Sybase, MS Access under Windows & UNIX OS; create repeatable reusable process for handling errors, retrieval, updates, data download and uploads; interact with users to document system requirements, limitations and functionality. Require MS or foreign equiv in CS/Engg (any branch) and 1 yrs exp in IT. High salary, f/t. Some travel required. Resumes to Salem Associates, Inc. 405, 6th Ave, Ste 102, Des Moines, IA 50309

ShellSoft has several openings for computer professionals. Attractive wage plus full benefit pkg. Skills in following areas are a plus: Oracle, SAP, Java, Unix, SOL, VB. Qualified applicants must have BS with some exp; travel maybe required. Send resumes to: jobs@shellsoftinc.com.

CDI is a national IT companies with over 30 offices. It is looking IT professionals at both entry and experienced levels. Applicants must have BS/MS or equivalent experience. Must have US work permit. Please visit www.cdicorp.com, find positions match your skills and send resume.

Ohio-based Telecommunications consulting company seeking qualified Software Engineers /Systems Analysts possessing MS/BS or equivalent and/or relevant work experience. 2 yrs relevant work exp. must include at least 2 of the following: Verilog, Vera, C, C++, Perl, VLSI/DSP Design, Java, Visual Basic, and Oracle. Send resume, ref, and salary req to: ICSS, Inc., 816 Morrison Rd., Gahanna, OH 43230.

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Marketing Information & Technology, Inc., d/b/a ChoicePoint Precision Marketing has an opening for System Engineer /Solution Architect. This person will design and develop database marketing solutions for clients, participate as key designer of each system, develop logical and physical process models, develop database update and output processes, produce database sizing estimates, and create and maintain database instances. This person will also evaluate new technologies for use with company's database solutions, analyze data processing requirements, and plan layout and installation of systems. Person will evaluate factors to determine hardware configurations. Person will confer with data processing and project managers, and be reviewed by the CTO. The candidate must have a Bachelor's of Science in Computers or Engineering, or the U.S. equivalent, and 4 years of experience in the job offered or as a System Analyst/System Designer, including experience designing and developing database solutions, creating and maintaining database instances, and evaluating new technologies for use with existing databases. The salary offered is \$93,500, and the work schedule is 8:30 a.m. - 5:30 p.m. Interested applicants submit 2 copies of resume.

Interested applicants send resume to:
Case #20019592
Labor Exchange Office
19 Staniford Street, 1st Floor
Boston, MA 02114

BUSINESS ANALYST (3 positions) - Assess business needs of clients in order to analyze, design and develop customized software apps. & systems in a client-server environment using C/C++, RDBMS, SOL, Erwin Tools, Visual Basic & Visual C++, Pascal. Require: Bach. degree (or foreign equivalent) in Comp. Sci./Engg., Mgt. Info. Sys., or closely related field, w/ 1 yr. exp. in the job offered or as a Prog./Sys. Analyst. Experience gained before, during, or after obtaining the Bach. degree will be accepted.

INFORMATION SYSTEMS ENGINEER - Design, develop & implement software applications for info. systems & computer networks in a client-server environment using C++, Visual C++, RDBMS, SOL, Erwin Tools, Visual Basic and Pascal. Require: Bach. degree (or foreign equivalent) in Comp. Sci./Engg., or closely related field, w/ 2 yrs of exp. in the job offered or in the design and development of software apps.; Exp. must include 2 years using C++ and Visual Basic.

All positions require paid travel on long & short-term assignments to client sites within the U.S. Comp. salary & benefits. 8a-5p, M-F. Mail resume indicating which position you are applying for to: Patricia Brown, Manager, H.R., Paragon Solutions, Inc., 3625 Brookside Pkwy., Ste 300, Alpharetta, GA 30022

Prog/Analysts to analyze, design, develop, maintain client server web apps using C, C++, Java, JDK, JMS, EJB, Servlets, JSP, UML, HTML, JDBC, etc on Netscape Appl Server platform for Sun Solaris, Windows NT OS; provide on site customer support and maintenance; troubleshoot, debug, modify, fine tune and perform code optimization. Require BS or foreign equiv in CS/Engg (any branch) with 2 yrs exp in IT. High Salary, f/t positions. Travel involved to client locations; Resumes to COO, Synergy America, Inc. 1565 Woodington Circle, Suite 101, Lawrenceville, GA 30044

Computer - Software Engineers needed. Seeking qual. cand. possessing MS or equiv. and/or rel. work exp. 1 yr. of the rel. work exp. must include working with coding & programming on RDBMS. Work with 3 of the following: WebSphere, ASP, VB Script, Oracle RDBMS, Smartcode, Java, Clientbuilder. Fwd. resume & ref. to Atlantic Data, Inc., Attn: HR, 1401 Devonshire Ct., Tallahassee, FL 32317.

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Perform seeks Prod. Support Analyst for Bellevue HO office. DESC: Install & support perf. mng. s/w. Config. & integrate enterprise & bus. info. sys. apps. to wk w/ perf. mng. s/w & corp. app. & web servers. Write shell scripts & C progs. in UNIX & C prog. & code debugging in UNIX & Win plats. Conduct capacity & load stress testing on customers' prod. test. & internal sys. util. Mercury Interactive load testing tools. Create virtual user scripts util. HTTP/web & C/C++ protocols. Engage in app. testing, debug, & data analysis. Conduct test on integrated environ. Train users on s/w prod. & anlyz. test data. REOS: BS in Engr, CS, Math, or Phys. + 2 yrs exp gathering functional & sys. reqs. for s/w impl. projects. Install, config. & integrate enterprise & bus. info. sys. apps. to wk w/ corp. app. & web servers. Write shell scripts & C progs. in UNIX, C prog. & code debug in UNIX & Win plats. Conduct capacity & load stress testing on prod. test. & internal sys. & perf. analysis of data resulting from capacity & load stress testing. Writing virtual user scripts util. C/C++ & HTTP protocols. Mercury Interactive Certification. Prem. sal. + bns. & benes. Pls. Reply to E. Klinck, Job#PI-101, 12715 Bel Red Rd, Bellevue, WA 98005.

Senior Software Engineer. 40hrs /wk. Will create complex operation or application systems. Provide analysis related to design & dev. and solve problems. Encode, test, debug & document programs on complex projects. Revise & update programs. Formulate oper. systems advancements & perform. Improve. Evaluate impact of software perform. & recommend changes to design. Will lead & supervise Software Engineers. Must have a Bachelor's degree in Computer Science and 4 yrs. exp. in job offered or similar. Please send resume to Rene Garcia, Software FX, Inc., 5200 Town Center Circle, Ste 450, Boca Raton, FL 33486.

VPD has openings for Sr. Programmer/Analysts responsible for all programming changes made to the VPD e-commerce web site, which is PROGRESS based. Build PROGRESS based reporting data warehouse. Minimum BS/MS plus exp. Send resumes to vpdinc.com

IT professionals wanted by Allecon Stock Associates. Responsible for design of IT systems for stock option/purchase administration. Applicants must have minimum BS with 1-yr exp. using J2EE, ASP, Java, etc. Competitive wage. Send resumes to stockadmin@allecon.com. EOE.

APPLICATION ENGINEER, POWER SYSTEMS
GE E.M.S., d/b/a GE Network Solutions, a leading provider of innovative information technology solutions for the global utility industry has an opening for a Power Systems Application Engineer in its Melbourne, Florida, branch. Job responsibilities include analyzing and defining requirements for power systems models; designing, developing, testing and implementing enterprise application integration software and attribute mapping for the integration of GE's power systems model to the EPRI CIM. Individual will also be responsible for creating power systems model updates and documenting all model modifications. Individual will be called upon to utilize C++, XML, CIM, Fortran, Rationale Rose, RDF and Object Oriented Data Modeling Methodology in the design and modeling process.

Qualified individuals will have an M.S. in Power Systems Computer Applications, Electrical Engineering, or related field and must possess working knowledge in Power Systems Model analysis, XML, CIM, C++, Object Oriented Data Modeling Methodology and RDF. Applicants should send their resume by surface mail only to Michele Duester at GE Network Solutions, 1990 West NASA Blvd., Melbourne, FL 32904, and must reference job number 2154WA.

Corporate Express has two openings in our Broomfield, CO office for Sr. Systems Analysts to design and develop order management enterprise resource planning (ERP) software applications on a Sun Solaris operating system. Successful candidates should have a bachelor's degree or foreign equivalent in Computer Science, Engineering, Science or related field, including Physics and at least two years experience designing and developing order management ERP software applications. Candidates must also have working knowledge of Oracle, Pro*C, Sun Solaris and Java. Respond by resume to Amy Kroll, Corporate Express, 1 Environmental Way, Broomfield, CO 80021 and reference Job #SSA.

S/W Engineers to analyze, design, develop, s/w apps using OS like MVS/ESA, UNIX, Windows NT, databases such as DB2, Oracle, Informix, programming tools such as COBOL II, Java, HTML etc and mainframe tools including FILEAID, XPDITOR, TSO/ISPF, INFOPAC, etc.; configure client server apps, document program specs, create appl prototype and train end users. Require: MS or foreign equiv in CS/Engg(any branch) & 1 yr exp. in IT. High salaries, F/T. Travel involved. Apply to: HR, Smartssoft International, Inc. 4898, South Old Peachtree Rd, Norcross, GA 30071

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NET2S is a leading International Consulting and Engineering firm specializing in communications technologies. We are presently seeking to fill the following positions:

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NET2S, 82 Wall Street Suite 400, New York, NY 10005; Fax: (212) 279-1960; Phone (212) 279-6565; or Email: jobs-ny@net2s.com

Sr. Network Management Software Engineer Portsmouth NH Design, develop & test secure, SSL, web-based user interfaces & services in support of network mgmt of Company's next generation, protocol agnostic, converged Fibre Channel & Ethernet switch, that is to be deployed within a Storage Area Network (SAN); develop a complete object-oriented framework utilizing backend Linux scripts written in TCL, Perl & BASH to make SNMP requests for dynamic web page creation & display of the mgmt & configuration data for purposes of switch services such as fault, configuration, accounting, performance & security; work individually, as well as within a team to develop a distributed, high-availability switch framework solution that guarantees an industry standard of continuous 5 nines (99.999%) uptime of the switch & its svcs; develop database schemas & data models for purposes of design, development & test of standalone SNMP Agents through which the web-based user interfaces & services can expose internal switch services & data. Must be able to utilize XML, DTD, & DOM to represent & access these databases through web enabled services; develop a distributed web-based solution for concurrent mgmt of multiple, interlinked Sandia switches; Design & develop web pages, interfaces, services & applications utilizing XML, DTD, DOM, HTML, HTTP, DHTML, Javascript, TCL & Java for the IIS &/or Apache web servers; design & develop multithreaded (Pthreads) & object-oriented user-interface applications & Linux based web-page interfaces & services; participate in the data modeling of the switch services mgmt data for use in developing a DMTF/CIM object-oriented mgmt database schema & framework consisting of a CIMOM process that translates XML over HTML/HTTP requests into switch configuration changes. Develop XML, DTD & DOM documents, data models & database schemas in support of this data modeling. Supvr: Manager, Software Design. Supervise 0 staff. Salary \$75,000/yr, 40 hrs/wk, 8:00 a.m.-6:00 p.m. Educ.: 3 or 4 yr undergrad degree or foreign equiv. in Computer Science, Engineering, Electronics or a related technical field. Exp: 2 yrs in job offered or 2 yrs in position developing networking &/or enterprise network mgmt solutions; 2 yrs exp to also include 2 yrs of exp with the following: Developing database schemas & data models; IIS, TCHTpd &/or Apache web servers; Development of multi-threaded, object oriented applications; Development of web-page interfaces & services; DTD & DOM; Development & deployment of software applications for use in a SAN environment; & at least three of the following technologies: TCL, Perl, XML, DHTML, HTML, HTTP, Java, JavaScript, SSL. Applicants must send two (2) copies of their resume/letters of application to Job Order #2003-001, P.O. Box 989, Concord, NH 03302-0989.

SYSTEMS ANALYST to provide on-site consulting in analysis, design and development of business applications for manufacturing, retail and service industry using CASE tools on IBM AS/400; customization, implementation and maintenance of ERP packages such as JD Edwards and support bar coding software packages using Websphere, EDI and development tools Visual Age RPG and web enabling legacy applications on AS/400; provide system software support on Windows NT, SOL Server, AS/400, Coldfusion, RPG, C and COBOL. Require: B.S. (or equivalent) in Computer Science/ Electronics Engineering and two years experience in the job offered or any experience providing skills in described duties. Two years experience must be on AS/400. 40% travel required to client locations within the United States. Salary: \$67,000 per year. 8am to 5pm, M-F. Apply with resume to: Vice President, Frontline Consulting Services, Inc., 8701 Mallard Creek Road, Charlotte, NC 28262.

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User System Development Analyst. Work Sched 8:00AM-5:00 PM 40 hrs/wk. \$64,378.08 P/A. Engineer, develop, code, & maintain web based, multi tiered application in Visual Age Java, divided into object oriented programmed classes (business logic & business processes), databases, & front end to provide users with comprehensive client history to determine account history, loan delinquency, eligibility of phone pay, & payment extensions. Use Windows Application Programming Interface protocol & COBOL II socket interface programs to access data from DB2 processing in Visual Basic (VB) client server applications. Design & develop client server business systems & Graphical User Interface. Design & develop Crystal reports using VB, for the Collection Centers agents to be used to recommend extensions of vehicle loans. Generate reports based on information in DB2 specifying criteria. Test & code rollout of application in all offices & call centers. Support vendor applications, Western Union Phone pay & Moscix Dialer developed in VB. Master (or equivalent), Electronics & Communication Engineering. One year experience in job. Employer Paid Ad. Send resume to MDCD, P.O. Box 11170, Detroit, MI 48202, Ref. No. 202718.

Software Engineer. Work Sched 8:00 AM - 5:00 PM 40 hrs/wk. \$64,378.08 P/A. Engineer, develop, mentor, & implement Web applications using Object Oriented methodologies, JAVA, C/C++, XML, & SHELL Scripts in UNIX/Windows-based systems including Solaris, Windows NT /95, & DOS in a Server-centric environment. Engineer & support e-Business & Web applications development, including JAVA, C/C++, & JAVA Script, & using software tools such as Power J, & other language environments in UNIX/Windows. Integrate Web applications with corporate data Management systems (using DB2, Sybase, UDB, & Oracle), Finance, Engineering, Human Resources, Procurement & Supply, International & Manufacturing Systems. Utilize UNIX/Windows-based tools to facilitate software applications, upgradeability & maintenance. Educate & assist Intranet Technical Services Teams to implement effective corporate-wide Web development/production infrastructure. Engineer, develop & support e-Business & Web-based applications for Netscape Enterprise, & IBM DGW/WebSphere servers. Bachelor (or Equivalent), Computer, Electronics or Electrical Engineering. Two yrs exp. in job offered. Employer Paid Ad. Send resume to MDCD, P.O. Box 11170, Detroit, MI 48202, Ref. No. 202673.

Computers - Compaq Business Software, Inc, a company which delivers innovative IT solutions to business clients nationwide has openings in Dallas, TX and Phoenix, AZ. We have immediate full-time opportunities for Programmers, Engineering Programmers, Programmer Analysts, Systems Analysts, Software Engineers, DBA's, Consultants and Software Consultants in any of the following areas: INFORMIX, UNIX, DB2, CICS, COBOL, C, C++, Visual Basic C++, Access, PowerBuilder, SOL, SOL Server, Visual Basic, Oracle, Sybase, CORBA, GUI, OOD, MFC, Win NT. Bachelor's or Master's degree required depending on position. We also accept the foreign ed. equiv of the degree, or the degree equiv in edu and exp. Excellent benefits. Send confidential resume and salary requirements to HR, Compaq Business Software, Inc., 2000 North Central Expressway, Suite 115, Plano, TX 75074.

Senior Programmer. 37.5 hrs/wk, 8:30 a.m.-5:00 p.m., \$62,000/yr. The Senior Programmer will perform PC Programming: help write and maintain complex application programs and systems in Visual Basic, C++ and SQL at the highest technical level, develop detailed system design and programming specifications to meet information requirements of assigned departments, and resolve systems problems. The Programmer evaluates users' requests for new or modified computer programs to determine feasibility, cost and time required, compatibility with current system, and computer capabilities. The Senior Programmer functions as part of a team participating in the design and enhancement of new or existing systems; designing, coding, and testing new programs and modifications; testing of existing programs; interfacing with customer to assist in the implementation of work requests; supporting the data processing requirements of the employer's companies; providing customer support for production systems and participating in the design and implementation of application software packages; providing support to the various customers in resolution of business problems; and coding, debugging, and testing application programs using C++, Visual Basic, and/or SQL program languages in a Windows 95/NT environment utilizing Oracle, SOL Server and 1-2 years of mainframe experience. Min. Reqs. incl. Bachelor's degree in Engineering, Computer Science, Mathematics or Business plus 3 years experience in job offered or related occupation of Systems Analyst or Programmer/Software Eng. Applications Developer. Must have: 3 years experience in Visual Basic and/or C++ and 2 years experience in SQL. Experience in Oracle, SOL Server, and 1 year of mainframe experience required. Applicant must also successfully pass the NCS CPAB (Computer Programmer Aptitude Battery) test administered by Employer for all applicants. Employer Paid Ad. Send resume to 7310 Woodward Avenue, 4th Floor, Detroit, Michigan 48202. Reference No. 202563.

MANAGER, Systems Engineering sought by MA IP Infrastructure & SW Company. Req'd to oversee devlpmt of proprietary s/ware programs, comm protocols & sys functional specs & ensure conformity in set-up; translate mkt research into specs for products & solutions; create test plans & troubleshoot progs to ensure qly control & max performance. BS in Elec Engg, Comp Sci or Comp Engg (or equiv) & 3 yrs rel exp in Sys Engg Dvlpmnt or Mgmt. Must be exp'd in H/ware design using VERILOG, S/ware/F/ware dvlpmnt using C/C++ & Security Protocol -IPSEC. Send resume (no calls) to: F. Baia, HR (Ref. 6MTS)Narad Networks Inc, 515 Groton Road, Westford, MA 01886

Colorado State University, a higher education institution, seeks a Unix Systems Administrator, General Faculty, to work in Ft. Collins, CO to install, configure, implement, and troubleshoot Linux, Solaris, and HP-UX workstations, operating systems, and servers for faculty, staff and students in the College of Engineering. Requires B.S. or foreign equivalent in Computer Science, or Electrical or Electronics Engineering, as well as 5 years experience as a Unix Systems Administrator for an engineering department or college in a higher education research institution, including configuring, installing, and troubleshooting all necessary computer systems; and working knowledge of Linux, SAMBA, NIS, DNS, Solaris, TCP/IP, shell scripts, and Perl. Respond by resume to Mark Ritschard, CSU, Engineering Network Services, Ft. Collins, CO 80523-1301.

Financial Analyst
Review and analyze financial information and data and develop mathematical and statistical models with respect to worldwide petroleum industry and commodities; design, develop and integrate databases for use in modeling economic and financial trends and conditions in the petroleum industry and petroleum markets; and prepare financial forecasts, reports and reporting systems on petroleum products, petroleum markets and general economic conditions and trends; utilizing FuzzyQuery and Analysis, Cluster Analysis, Data Visualization, SOL, Linear Equations, Data Normalization, EDI Mapping and Black and Schols Model. Requires M.S. or M.B.A. or equivalent masters level degree with focus in finance and one year experience in computer modeling of economic phenomena involving petroleum commodities. Qualified applicants must presently be eligible for permanent employment in the United States. Successful applicant must be able to perform job duties on date of application. 40 hours per week (8:30 a.m. to 5:30 p.m.); overtime as needed without additional compensation. Position is with GP&W, Inc. d/b/a Center Oil Company, 600 Mason Ridge Center Drive, St. Louis, Missouri 63141. Send resumes to: John Niemi, Chief Financial Officer, GP&W, Inc. d/b/a Center Oil Company, 600 Mason Ridge Center Drive, St. Louis, Missouri 63141. EOE

Vienna VA Consulting Co. seeks Sr. Systems Engineer to be responsible for managing software development including requirements analysis, specification development, user interface design and development, quality control and testing, heterogeneous systems operations and security design/control; analytical modeling of Network systems. Min. req: Master's Degree in Computer /Electrical Eng. and 1 yr. exp. in job or job related. Must have exp. with Unix Operating, Novell Netware, Windows NT, C/C++ Languages, VB, MS-SQL Server, DBase, FoxPro and Clipper CA, OOD of Client/Server Applications using Power Builder; working knowledge of mathematical analysis and modeling of networking protocols. Work is in Washington DC. Resumes to H.R. Dept., Resource Consultants Inc., 2650 Park Tower Dr., Vienna, VA 22180. No calls. EOE.

Seeking qualified applicants for the following position in Colorado Springs, CO: **Senior Business Application Analysts**. Manage business aspects of IT development projects. Requirements: Bachelor's degree* in computer science, mathematics, statistics, accounting or business plus 5 years of experience in analyzing business systems and developing technical automated solutions. Experience with analytical reporting using either Focus, SAS, SOL or business intelligence tools; and project or program management also required. *Master's degree in appropriate field will offset 2 years of general experience. Submit resumes to Recruitment, FedEx Corporate Services, 350 Spectrum Loop, Colorado Springs, CO 80921. EOE M/F/D/V.

Software Engineers:
Design, develop, test and implement specialized J2EE applications in Versata Logic Suite with workflow engine in DB2 and Websphere on Unix while migrating from SAP and other legacy apps. Travel to Client Sites for on site development. U.S. Workers only. Prevailing wage/benefits. Send resume to Attn: Vipul Goel, NetAppl, Inc., 2415 San Ramon Valley Blvd., Suite 4140, San Ramon, CA 94583. EOE.

PROGRAMMER ANALYSTS
required for Louisville, KY office. Design, develop & maintain software applications using Developer 2000, Designer 2000, VB, Oracle, Cobol, C++, Erwin; Develop & implement client /server applications in oracle financials using synchronization techniques such as PL/SOL, Developer 2000 & designer 2000; Perform system and integration testing; Develop relational database system in oracle, VB & Windows, Unix environment. Bachelors Degree or equivalent reqd in Computers, Engineering Math or any other related field of study + 2 yrs of related exp. 40 hrs/wk. Must have proof of legal authority to work permanently in the U.S. Send resume to HR Manager, Indacle Software, Inc. 1303 Clear Springs Trace, #208, Louisville, KY 40223

Prog/Analysts to analyze, design, develop, test & maintain, apps using C, C++, Java, HTML, Oracle, SOL Server, Delphi, COSMOS, LISP, etc. under Win NT/2000, UNIX, vxWorks OS; evaluate user requests for enhancements to existing programs & creation of new programs, determine tech feasibility, document program dev process, logic, coding, and corrections. Require: B.S or foreign equiv in CS/Computer Engg with 2 yrs of exp in IT. High Salary, F/T position. Travel involved. Resume to: HR, Get Proof, Inc. 3050 Royal Blvd S., Ste 195, Alpharetta, GA 30005.

Programmer Analyst
Manh, NY- Software/Sys. Dev. firm seeks qualified indiv. to analyze, develop, revise, test, & fine-tune multimedia presentations, under supervision, for clients. Req'd: BS in CompSci or Tech Field & 1 yr exp. in the job offered. Must have exp in Lingo, SOL & Install Script. Must know Macromedia Director Software. Pls send res to: Cynthia Carnesi, Interactive Edge, Inc. 18 W. 18th Street, 5th Fl., NY, NY 10011

UNIX Administrator, Textile Supplies Company. Must have Bachelor's Degree in Computer Science/related field or equiv., and 2 yrs exp. in UNIX administration in HA (MC/ServiceGuard) environment. Maintain and administer all technical equipment, operating systems, and applications for mid-range to enterprise level systems. Proficiency with Informix databases. Duties include back-up, recovery, installation, upgrades, development support. 40 hrs/wk, 9AM-6PM. Competitive salary. Send resume to: National Linen Service, ATTN: Danielle Strange, 1420 Peachtree St., NE, Ste. 500, Atlanta, GA 30309.

SOFTWARE ENGINEER sought by human services management consulting firm in San Antonio, TX. Must possess Master's in Computer Science or MIS plus 3 yrs. exp. Respond by resume only to: Corp. Recruitment Manager, P/Z. MAXIMUS, INC., 11419 Sunset Hill Rd., Reston, VA 20190.

S/W Eng: Design Windows and Unix applications for streaming video and video conferencing products over Ethernet and ATM networks using C, C++, and html. Create and apply DirectX /DirectShow filters. Create players to allow user to set preferences, convert streams to different formats w. Windows media format SDK. Design interfaces with COM. Apply re Ad #4 to B. Meehan, VbrickSystems Inc., 12 Beaumont Rd., Wallingford, CT 06492, email: bridgetm@vbrick.com

Programmer Analyst. Develop & tune web-based apps using various s/ware tools. Bachelor degree in CS, or equiv, req'd, as is 1 yr exp in a P/A position. Prior exp must include exp w/ Visual Basic, HTML, & ASP. Competitive Salary. Employer located in Austin, TX. Work out of residence & be assigned to client sites in Atlanta, GA. Resumes to S. Puri, Job #1629.70, Business Software Associates, Inc., 8140 N. Mopac, Bldg. 1, Ste. 130, Austin, TX 78759.

Programmers & Developers:
Design, develop, test and implement specialized applications as per custom specifications in ERWIN, Oracle Web Portal, Data Junction, Data Warehousing, Datamarts and Cognos BI. Prevailing wage/benefits. Send resume to Mr. Chinna Rao, Bhargav Computer Consulting USA, Inc., 42 Read's Way, New Castle Corporate Commons, New Castle, DE 19720. EOE.

Software Technology Applications Analyst (Trumbull, CT) Research, design, & develop computer software systems in conjunction w/ global deployment & support of e-business applications. Req'd: Master's deg. in Electric Eng'g, Comp. Sci., or related field & 3 yrs exp as Software Engineer or related occupation. Must have exp. w/ Vignette V6 Content Management Suite, Oracle Database & Java Applications (JDBC, RMI, JavaBeans, Servlets, & JSP). Send Resume to General Reinsurance Corporation @... Bayard Box #002, 902 Broadway, 10th fl., New York, NY 10010.

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Mid-Atlantic

Office

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documents. And it finally might be a feature set that would spur Office upgrades, which have been stagnant over the past years.

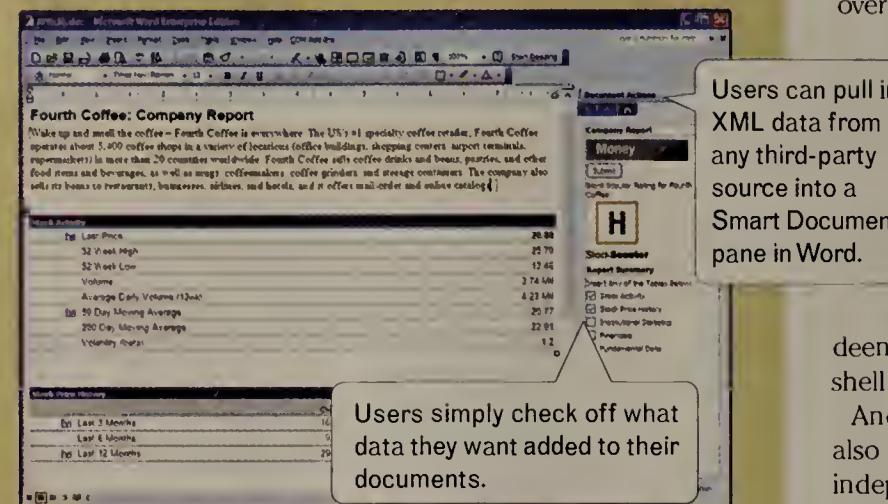
The addition of XML support was the highlight last week in the introduction of the first beta version of Office 11. The support means Microsoft finally is beginning to detail how Office, which has nearly 95% of the desktop productivity suite market, fits into the client side of .Net, Microsoft's nebulous strategy for building and deploying distributed applications based on Web services.

In addition, Office 11 includes technology to tie its applications into collaboration and instant-messaging services key to .Net that are being added to the operating system.

"XML is beautiful," says Francis Blay, a Microsoft Exchange administrator for RWD Technologies, a consulting company focused on enterprise system integration, manufacturing and e-learning software. "If you save something in XML it is ready to plug into any system. It gets your

Data collector

Microsoft is providing support for XML file formats in Office 11, which means users can import and export data to any number of systems.



data ready to use anywhere in the enterprise." Blay also says integration between Office and collaboration features being added in Windows .Net Server could eliminate the need for multiple clients.

"If we can tie our conferencing and collaboration into Office then users don't have to go to a third-party client," he says.

None of those possibilities is around the corner but Microsoft must begin moving in that direction, experts say.

"This is about the idea that Office is a smart client around .Net," says Simon Marks, product manager for Office. "It's about Office as the interface to a lot of other functionality. It's more about

Office as a client/server interface and less about individual applications."

But make no mistake, it's also about reviving interest in Office, whose new feature sets over the past few years have not created an upgrade stampede among corporations.

"They really need to reshape Office to get users to adopt another upgrade," says Dana Gardner, an analyst with Aberdeen Group. "Office 11 really is a shell to the .Net framework."

And Gardner says Microsoft also will use that shell to entice independent software developers to the .Net platform. "It's a real sugarplum Microsoft is dangling to [independent software vendors]. They adopt the .Net platform and Microsoft gives them entree to Office." Microsoft last week announced an alliance with Siebel Systems to more closely tie Siebel's line-of-business applications to .Net and Office.

With Office 11, Microsoft is adding a feature called Smart Documents, which allow users to pull data from XML sources and insert it into documents. Microsoft also is developing an Office companion called XDocs, which has been loosely defined as a forms technology for data input. Office 11 will have a research feature that lets users search XML data on the Web or in corporate repositories.

That feature complements XML support in SQL Server today and the forthcoming Yukon version of SQL Server that will form the basis of a universal file system.

- Manager extracts information from Integrator into a console of gauges that monitor uptime/downtime, performance levels and security violations. It examines the headers of XML messages based on Simple Object Access Protocol (SOAP) and tracks their behavior.

- Analyzer is for business executives. It looks into the payload of SOAP messages and extracts business information, such as buying patterns. Analyzer also can generate alerts based on pre-configured performance thresholds and produce activity reports.

Mindreef also is targeting SOAP traffic with its SOAPScope. The tool captures SOAP messages from a network, and stores and analyzes them as a means toward tracking down interoperability problems between Web services applications.

"We are debugging the message traffic in Web services applications," says Jim Moskun, who co-founded the company last year.

Mindreef initially is releasing a developer's version for \$99. An enterprise version is expected early next year. ■

Start-ups key in on Web services

■ BY JOHN FONTANA

Two start-ups last week introduced products that should help corporate customers monitor and manage Web services environments.

Confluent Software rolled out three products designed to help corporations integrate, manage and monitor distributed applications built with Web services. Meanwhile, Mindreef will introduce SOAPScope, its diagnostic tool that monitors Web services traffic, much like today's network monitors, and pinpoints problems.

Both companies are driven by the fact that most of the Web services hype has focused on integration and not on the security and management shortcomings of the technology.

"Web services may be great for integrating systems, but they don't do anything to manage all the connections you will have," says Brent Sleeper, principal and co-founder of The Stencil Group consultancy. Sleeper says Web services with its loosely coupled components could result in dis-

tributed applications that have anywhere from one to 1,000 connections across the network.

Confluent says it hopes to address this issue with its Core Web Service Integration and Management Platform, which is made up of three modules — Integrator, Manager and Analyzer.

"With Core, we are mapping networking into a Web services context," says Rajiv Gupta, Confluent's co-founder. Gupta, who helped pioneer Web services as the general manager of Hewlett-Packard's failed eSpeak Web services platform, says he is putting what he learned to work. "The scar tissue has been helpful," he says.

The modules, which start at \$50,000, run as applications on a variety of Web Application Servers including BEA Systems' Web-Logic, IBM's WebSphere, Microsoft's .Net, Sun's Sun One and open source Apache Tomcat.

• Integrator is a traffic cop. It's a proxy between distributed Web services, and defines and enforces policies that control their interaction. Integrator also logs activity, provides quality-of-service routing and acts as a translator.

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for Windows.

Office 11 also adds Document Workspaces, an ad hoc document collaboration feature based on the company's software for creating team workspaces called SharePoint Team Services, which is being added to Windows .Net Server. Another feature, Meeting Workplaces, is built on the same technology and provides tools for managing meetings and capturing data. Both workspaces will depend heavily on instant-messaging technology that also is being added to the next version of the operating system.

"It was inevitable that Microsoft had to create a way to have an interface on the desktop for humans to interact with Web services so they could create and modify data," says Paul DeGroot, an analyst with Directions on Microsoft, a research firm. He says Microsoft has been inching in that direction, but "the thrust in Office 11 is quite an important extension in Web services development."

While the move to support XML might have been inevitable, experts say Microsoft is taking a risk by opening the door to vendors that might build a better Office.

"If you allow users to save documents as XML, it unleashes the lock Microsoft has on the desktop," says Ted Schadler, an analyst with Forrester Research.

He says it leaves an opportunity for others such as IBM or Oracle to provide back-end alternatives to Microsoft servers that could feed data to Office applications. ■

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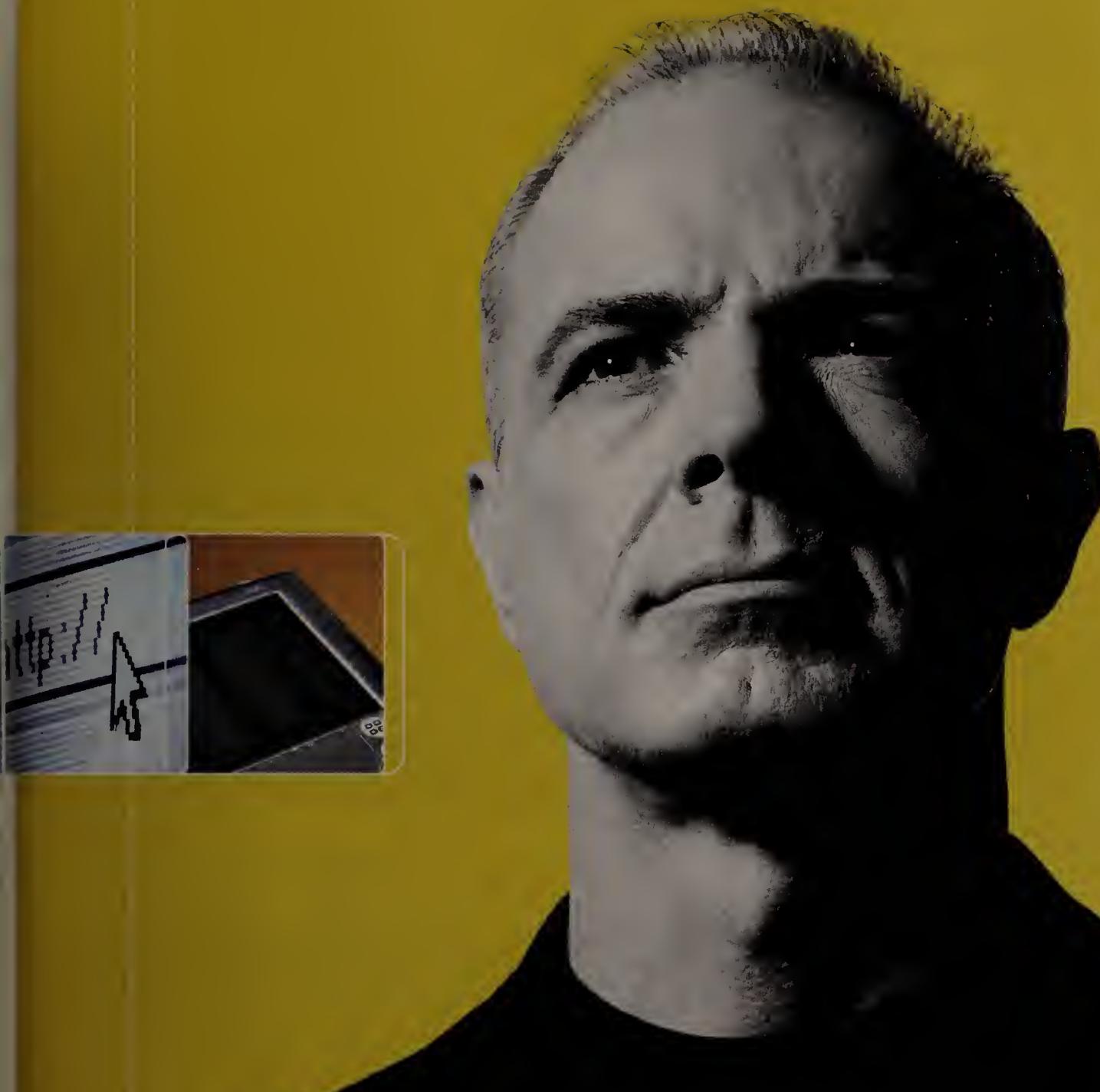
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Anything for a buck

Last week I was lamenting the "anything goes" sensibility of today's online marketing (www.nwfusion.com/DocFinder:2850).

As evidence, I cited a lewd ad for Lynx body spray that is delivered using technology from a firm called EyeWonder.

Reader Rob Davies wrote: "The Unilever Lynx body spray ad actually plays on U.K. broadcast TV and Satellite channels. The issue here is the Internet erases all country boundaries, and so content is accessible to consumers in a region where the government may have decided that it's inappropriate for them to see as local content."

Davies raises the interesting issue of censorship and the 'Net's role in circumventing the uncomfortable reality of our elected representatives being able to tell us what we can and cannot read and watch.

And when you think about it, the fact that we (the people) have accepted censorship of television and radio without much more than a mutter it is extraordinary. Try to take away our guns and we are outraged, yet take away our media and we shrug. This says something profound about our perspective and priorities.

It is curious that something as apparently ephemeral as the Internet has emerged as such a profound agent of cultural change. But while that change

might appear in the balance to be to the good, the trend of Internet society is apparently toward the lowest common denominator. We are creating an online pop culture that is bigger and more influential than offline pop culture.

Of course, how could it be otherwise? The economics of the 'Net are such that it is no longer the sole province of the priests of technology or a rich man's playground. It is open to all and sundry.

The 'Net connects anyone to anyone who wants to be connected and, because anonymity and the adoption of a new persona is relatively easy, the normal constraints vanish, leaving a social environment where normal standards can be jettisoned without much risk of consequence.

What we're seeing online is that the social context has changed because pop culture — the culture that defines our society — online is distinctly different from and becoming more influential than its real-world counterpart.

To begin with, ideas online move faster and are not driven by the media as much or in the same way as offline. What was a culture-shaping offline pop meme yesterday is not remembered online as more than a retro echo of fashion, of what used to be cool.

This represents a profound change in the public way opinion is developed in the market. This change is already driving advertisers to rethink their mes-

sages and methodologies, which explains the rise of some of the online practices we loathe, such as spamming and pop-ups.

Reader Kate Lowman wrote: "The Internet has gone from 1999-2000 when you could do anything and make a buck, to the 2002 version where you better be willing to 'do anything' to make a buck."

Let me make a prediction here: Over the next year, watch as the use of sex as an online selling tool explodes. There will be a consequent backlash from the conservative side of our society and the potential for reflexive and therefore inappropriate legislation will skyrocket, thus legislation for control of online content will become a hot political issue. And this already is happening. Last week I quoted the CEO of EyeWonder who said: "The Internet allows you to communicate more precisely to a demographic you want to reach without having to worry about Susie, who is 6 years old, seeing it. You can appeal to John, who is 22 ... with more creative license."

Reader Andrew Stodart responds, "As an industry, we need to raise our heads from the murky depths of the latest technology and look at what has been created over the last 30 years. Can we really say we have no responsibility to 6-year-old Susie or even 22-year-old John?"

Your thoughts to backspin@gibbs.com.

'NetBuzz

News, insights, opinions and oddities

By Paul McNamara

Rotten politics in the Big Apple

When the late Speaker of the House Thomas P. "Tip" O'Neill uttered his famous line about all politics being local, he wasn't saying that's always a good thing.

It certainly was not in New York last week, as evidenced by the parochial political uproar over — strangely enough — an evolving network

disaster-recovery plan.

As my colleague Ellen Messmer reported Oct. 21, a quartet of regulatory agencies led by the Federal Reserve has drafted a blueprint designed to assure that any future catastrophic terrorist assault does not put the nation's financial capital out of business for as long as the last one did. Wall Street trading was halted for a week after Sept. 11, and, according to the movers behind this initiative, back-up plans and facilities proved woefully inadequate throughout the financial district.

Among the corrective measures being proposed is that central and back-up facilities for the most important financial institutions be separated by at least 200 miles. The thinking is that only such separation will provide the necessary assurance that an attack will not disable both locations.

After the New York press caught wind of this suggestion last week, howls of anguish erupted from New York Gov. George Pataki, New York City Mayor Michael Bloomberg and the city's Chamber of Commerce.

The reason is the prospect of lost jobs and a diminished tax base. Pataki, Bloomberg and the Chamber cheerleaders are apparently convinced that this regulatory mandate, should it come to pass, will decimate the already-depleted employment rolls within New York's financial district. They even ginned up an estimate of the economic carnage: 25% of 155,000 jobs. (Rule of thumb when dealing with politicians:

Divide such "estimates" by at least five ... 10 to be safe.)

"It's a horrible, horrible concept," Pataki told New York's *Daily News*.

How horribly horrible? Well, the governor says, the requirement will not only drive these jobs out of New York City but clear out of the country. ... It's not clear why.

"We all want to make sure we have back-up facilities," Bloomberg harrumphed. "But splitting a company into two parts and moving one 300 miles away is, No. 1, giving in to the terrorists, and No. 2, it just doesn't work."

Giving in to the terrorists? I suppose you could make the same argument about extra security screenings at the airport ... if you want to be the butt of late-night jokes by Leno and Letterman.

Let's be clear here. I wouldn't pretend to tell anyone whether the optimum separation between primary and back-up banking facilities should be 200 miles or 200 yards.

But I do know this much: That calculation has absolutely nothing to do with New York City's tax base or unemployment rate.

On the one hand, it's truly remarkable that these political and business leaders would place a purely parochial issue on a par with a truly national (if not global) imperative: protecting the network infrastructure that supports this country's financial system.

On the other hand, of course, this is what politicians do for a living.

The good news is that in theory, at least, the Federal Reserve and its regulatory partners in this endeavor — which includes the New York State Banking Department — are supposed to toil above political fray.

Let's hope so. For it would truly be a sad commentary on our leaders and our priorities if the regulators bow to the pressure being applied by these myopic special interests.

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